



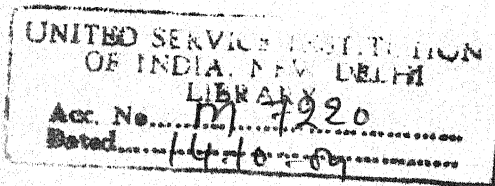
NAVAL WARFARE

by

Admiral Sir H. W. Richmond

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PREFACE

THE two papers which form this small volume were written, and delivered as lectures at King's College, in the spring of 1926, and were published in 1927 in a volume edited by Sir George Aston under the title *The Study of War* (Longmans & Co.). The intention of the writer was to set out, in as short a space as possible and in the simplest terms the broad basic principles which cover the use of sea power in war.

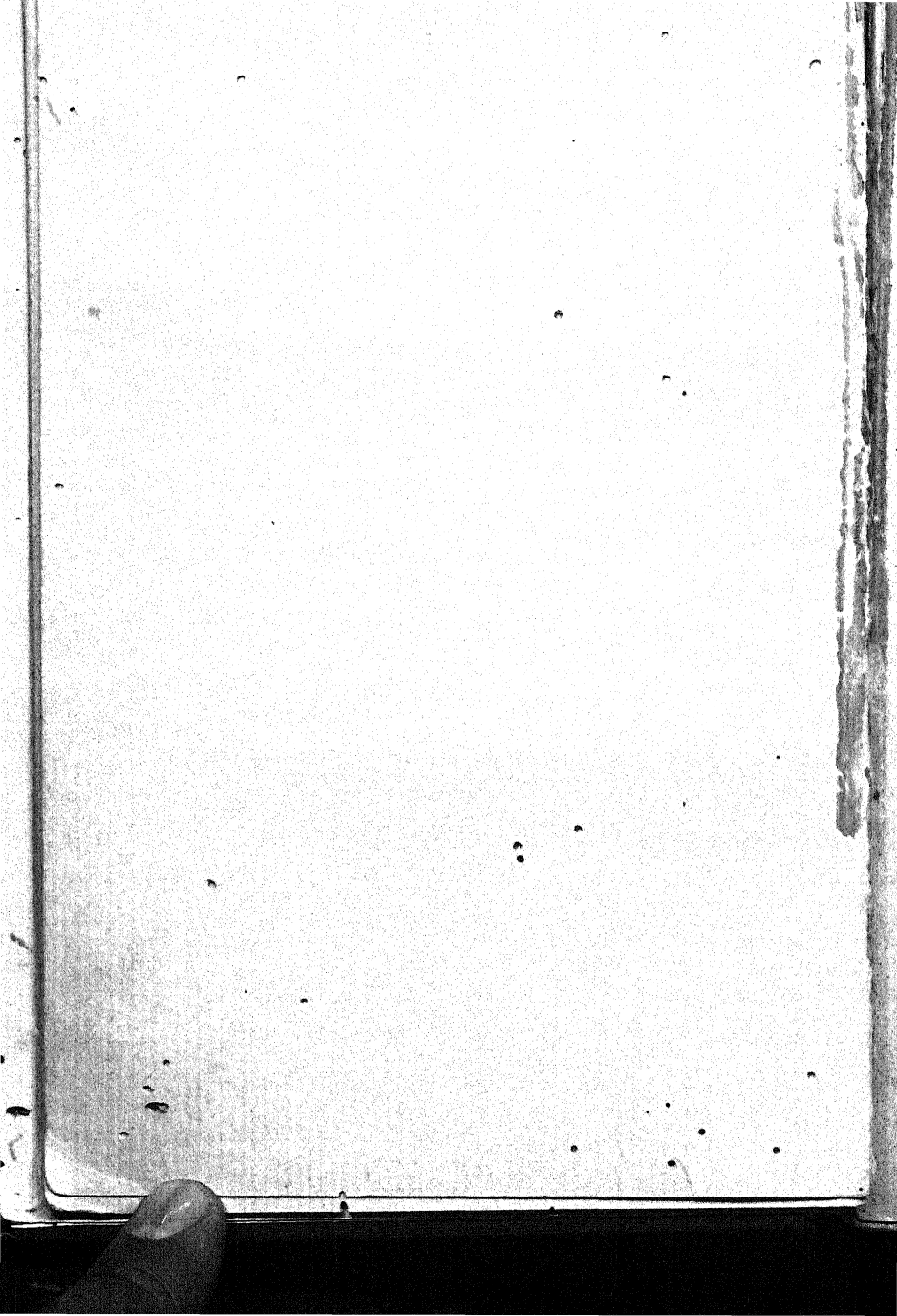
When it was proposed to him some time ago that the papers should be republished, the question of whether they should be revised was considered. Nothing, however, had occurred in the interval of four years to alter any of the conclusions; and although it would be possible to express more precise questions upon some particular points, and largely to add to the number of examples used in illustration, which the publication of many works upon the late war has rendered available, it was considered best to leave them in the form in which they were written.

H. W. R.

January 1930.

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I



I

GREAT wars are followed, not unnaturally, by reactions in thought. Men properly consider whether there be not a more rational method than war of settling their disputes. The wish becomes father to the belief that future generations will differ from their predecessors, and act rationally ; so that wars will be no more.

In the presence of such a tendency of thought it seems, if not impertinent, at least a waste of effort, to make a study of war : and this same thought has occurred to students in earlier times. Jomini, writing in 1837 his *Précis de l'Art de la Guerre*, said : ' It is perhaps foolish to publish a book on war at the present time, when the apostles of universal Peace alone are listened to.' So, too, Sir Edward Creasy, some fourteen years later, thought an apology necessary for writing about battles. ' It is an honourable characteristic of the spirit of this age that projects of violence and warfare are regarded among civilised states with gradually increasing aversion. . . . For a writer therefore of the present day to choose battle for his favourable topic would argue strange weakness or depravity

of mind.' Yet four years later there was a great war with Russia : within nineteen years Prussia forced the three wars of 1864, 1866, and 1870 ; and since then we know only too well, and the National Debt testifies, that the 'increasing aversion' referred to by Creasy, and which we of to-day unquestionably share, has not prevented men from using the 'irrational' instead of the 'rational' method of settling disputes.

At the present time we are about to discuss what 'disarmament' is practicable : but it is not suggested that all armaments can be abolished. It is of little use to maintain even small armaments unless one knows how to use them—since the mere fact of their maintenance implies that they may have to be used. Further, a knowledge of their use is necessary if reduction is to be made intelligently. Both of these reasons, no less than the widespread misconceptions we see daily, furnish ample justification for making some study of the several branches of warfare.

Sea warfare is one of the branches of warfare. Action at sea is not something distinct from, something unrelated to, the other activities of war. What the relation is, and the part sea warfare plays in the general struggle called 'War,' should be clearly appreciated.

The operations of the sea forces constitute a course of action to attain the object of the whole of the fighting forces, of which they are a part. The operations of the whole fighting forces are themselves a course of action to attain a national object—the object for which the nation went to war. What is that object? That object is to compel the enemy nation to compliance, to force them to accept a solution of some difference against their will. The national object can indeed be carried further back to the end expressed by Aristotle, Turpin de Crissé, or General Sherman—Peace; but for our immediate purpose that is not necessary, though in the conduct of war it is not an end that should be left out of sight. Hatreds generated by brutality are obstacles to peace.¹

Compliance is compelled by the imposition of hardship. In the long run, that which obliges one nation to surrender claims which it considers vital to its national existence or security, is the hardship it will suffer if it does not surrender. Although surrender follows the defeat of the

¹ 'Ends differ; sometimes the action itself, without more, constitutes the end; sometimes there is something beyond, which is to be accomplished by the action, which is the thing sought, or ulterior object.'—T. Marshall, *Aristotle's Theory of Conduct*, p. 55.

fighting forces, it is not the loss of so many tons of wood or steel called 'ships,' or so many hundred thousands, or even millions, of men out of the millions of the population that causes surrender, but the results that follow from their loss. For instance, in the First Dutch War, a number of battles disastrous to the Dutch fleet brought about surrender, not because those ships and men were lost, but because their loss rendered the Dutch unable to continue their trade by sea on which their national life depended. The battles of the Gabbard and the Texel made the English, in De Witt's words, 'Masters *both of us* and of the seas'—of '*us*,' the Dutch nation, whose life-blood was thereby stopped. They were not what Jomini called 'sterile battles'—battles fought for the sake of winning them; but battles of which the result was fruitful, conferring the power to inflict pressure on the enemy nation with whom we were at war.

Compliance, as that example shows, can be compelled by interruption of essential external lines of supply and distribution. The degree to which a nation is dependent on the external lines by sea is the measure of efficiency of sea warfare against that objective. Though I must speak with diffidence of land warfare, I suggest there is

an analogy. The overthrow of the armies is usually followed by surrender, not because of the actual loss of men, but because the nation is thereby defenceless. The life of a nation is largely made up in the activities of production and distribution : loss of defence places the means of production and distribution in the hands of the enemy. To stave off occupation and its ills, the nation, when its armies are defeated, surrenders, in order to avoid the greater ills which occupation would entail. Ludendorff in October 1918 wished to continue fighting when he heard President Wilson's suggested terms. 'Could the terms be harder than they promise to be?' he asked. 'Oh, yes,' replied the Chancellor, 'they might invade Germany and lay waste the country.' Occupation did in fact follow, and we witnessed the subsequent seizure by the French of a centre of production, the Ruhr, with this aim of compelling compliance upon the people. Pressure would be brought upon the enemy people by such occupation : but it could not be brought until the enemy was disarmed by the overcome of his armies.

Thus we may say that an enemy people may be compelled to compliance by loss of the use or control of its internal and of its external communications.

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The services of *internal* production and distribution are, in the main, vulnerable only to military or air attack : though that part of internal distribution which is conducted by coastwise traffic is exposed to sea attack—as it was in France in the Napoleonic wars, and, in a still more marked form, in the United States in the war of 1812. The external lines are by land and sea, over land frontiers and out of the seaports. So far as they run by land, they are vulnerable only by land or air attack. But inasmuch as a very large proportion of the trade of most countries is conducted by sea, and many necessities can come only by sea, the stoppage of the sea communications constitutes a more serious hardship.

A country may redress its loss of sea-borne commerce by increased trade on land : Napoleonic France, for example, though almost completely invested by sea, had still the European markets open, and French foreign trade actually increased by some 50 per cent. between 1800 and 1806 ; but as European markets became restricted, the trade fell back to its original figure and did not recover. That this investment of France influenced her to a serious degree is not less clearly to be traced in her continual financial difficulties than in Napoleon's desperate efforts to bring the constriction

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to an end, culminating in his disastrous Russian adventure of 1812—a campaign resulting directly from the effects of the sea warfare.

One may make an analogy between the attempts to coerce a nation and those to coerce a fortress. A fortress may succumb to investment or assault; Paris and Kut fell to investment; Badajoz and Seringapatam to assault. A nation may succumb to investment or assault; Holland in 1654 and Spain in 1762—for the capture of Havana constituted investment—fell to investment; Austria in 1866 to assault.

When sea power and land power are joined together, as in the late war, compliance results from a combination of the results of investment and assault, investment weakening the power to resist assault, and assisting to cause that weakening of the so-called 'home front' to which some attribute the final collapse of Germany. Sea warfare may be waged to contribute to the efficiency of assault, furnishing the power to attack in theatres where the enemy is at a disadvantage—as it did in Spain in 1809; and in conferring freedom of movement to armies in purely land campaigns, as in the campaigns of Mehemet Ali, in Chile, and in almost innumerable other wars.

The doctrine of what is erroneously called the

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'capture of private property at sea' is more easily appreciated if sea warfare is thus examined in its strategical aspect. It cannot be too strongly insisted that it is not the capture of individual merchant ships, the property of, and carrying the property of, the individual citizens, that is aimed at. It is the stoppage of the enemy's flow of commerce. Capture, or the prospect of capture, is a means to an end—it forms the deterrent to sailing. Assuredly, it was not when our cruisers were making handsome hauls of prizes in the Soundings—generally to the detriment of the services of the fleet—that our sea warfare was making itself most felt. The mere fact that there were enemy vessels at sea to capture showed that commerce was continuing to sail. Sea warfare was becoming an influential economic factor when there were no enemy merchant vessels at sea to make prizes of—when the flow of commerce had stopped.

Loss of shipping can be avoided by the simple measure of keeping ships in harbour, but shipping that does not ply is mere useless wood or steel. Ships in harbour are not keeping up the flow of vital trade; they are but mere registers of its death, silent witnesses to the success of the enemy's investment. It is indeed questionable whether

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more injury was not done to trade by the stoppage of sailings caused by the *Emden* than by the actual losses of the ships and cargoes she captured or sank.

Sea warfare is not confined in its ultimate aims to investment—bear in mind that I am at this stage speaking solely in terms of *ultimate* aims and not of the course of action required to attain them, which is a different matter. It opens, as I said earlier, new channels for the assault, gives freedom and mobility to armies. Neither Maillebois nor Bonaparte would have undertaken their invasions of Italy by the Alpine passes or the Corniche Road if the sea had been open—as the Directory desired—for the transport of troops. But a detachment of the Mediterranean Fleet under Nelson closed that line of communication and co-operated with the Austrian army under Beaulieu. ‘My Squadron,’ said Nelson to one of Beaulieu’s officers, ‘had no other object whatever but the co-operation with his army.’ And this he was able to do because his little detachment was covered by the battle fleet off Toulon under Sir John Jervis, which, keeping a close observation of the fifteen battleships in Toulon, neutralised their action. This digression from major to minor strategy is made to call attention to a vital principle which lies at the

bottom of the so-called 'battleship question.' The mobility and the choice of objectives are possible only if the enemy's main force is strictly attended to. The enemy on this occasion had a main force of fifteen 'battleships' in Toulon. Sir John Jervis lay close to them, ready to engage them if they moved. Without that battleship cover Nelson's small detachment could not have given five minutes' assistance to the Austrian army.

The direction of effort in sea warfare may be illustrated in three wars—the Elizabethan, the Dutch War of 1654, and part of the War of the Spanish Succession.

In the first, in so far as any continuous policy was followed, naval warfare took the form of investment. Spain was dependent for her national life upon her trade with the Indies: the bullion brought from thence by her fleets was vital to her. Against these fleets—fleets of well-armed vessels—and the ports where they gathered or whence they sailed, the various expeditions of Drake and others were launched. If that trade in bullion could have been completely stopped Spain would in effect have been invested, investment being a deprivation of essential supplies.

But no regular or continuous measures to stop

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the trade were used. The investment was incomplete. The reasons were mainly political and psychological, and need not be examined here. The result of not breaking the communications was that Spain survived and was able to attempt her unsuccessful counter-blow in the form of assault, the Armada. The greater flexibility of finance in modern times, and the increased possibilities afforded by credit, stave off such immediate disaster. They do, however, but postpone it : and though postponement may save a situation, it cannot be indefinitely prolonged, as we ourselves found in 1917.

But that the Elizabethans, such as Monson, were justified in their view about the cutting of the sea communications of Spain with her sources of power in the western world, was shown by the result of Blake's action at Santa Cruz. Cromwell and Blake, true Elizabethans each in spirit, than whom no one was more thoroughly imbued with the spirit of striking at the enemy's armed force, fully recognised where Spain's heel of Achilles was to be found. When the opportunity arose, Blake's fleet arrested the passage of the bullion at Santa Cruz. The results reached far beyond the harbour in Tenerife. Spain's finances were crippled ; her military operations were thereby

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stopped. Unable to pay her armies, the invasion of Portugal came to a standstill, and Portugal was saved on the brink of disaster. Spanish power in Europe was struck at its very roots, and Marvell's lyrical celebration of the victory expressed a strategical truth when he sang

Oh would those treasures which both Indies have
Were buried in as large and deep a grave ;
War's chief support with them would buried be,
And the land owe her peace unto the sea.

In the war with the United Provinces, on the other hand, complete investment was attained as a result of the destruction of their fighting forces and the peculiar and unfavourable position of Holland. Even more dependent on her sea-borne commerce than Spain, she succumbed when it was stopped. It is sometimes said that a navy cannot win a war by itself. The statement is generally true, but, as this war shows, is not of absolute application. Nor need we seek evidence farther back than 1917 for a similar exception.

The War of the Spanish Succession shows a different orientation of the sea warfare in major strategy. Different conditions called for different use of the national forces. France was the enemy, we were not single-handed, and she was not

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dependent on sea trade as Spain and Holland had been. Moreover, the object was different. The aim of the Grand Alliance was to prevent France obtaining the hegemony of Europe. Her armies had to be driven out of Flanders and Spain. This end could be obtained only by military action, and the principal object of the naval forces of the Alliance was to assist the armies in that task. The assistance they could give was great. Stationed in the Mediterranean, the fleet controlled the sea lines of passage between France, Catalonia, Naples, and Genoa : enemy troops could not move except by land. It could afford invaluable support to the troops of Savoy and Austria, who, moving into France in this part, could provide an influential diversion for the armies in the great theatre in the North : and, on the economic side, the mere fact of the fleet's presence in those waters, and the station which, in order to fulfil those military demands, it occupied, stopped the supply of resources of the greatest military and economic importance. Marlborough's proposal for 1707 was one of progressive steps in co-ordination. The first military blow aimed at the destruction of the enemy fleet and arsenal at Toulon. The use of the sea was of such importance that this would bring about a diversion of troops from the army in the

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Netherlands. If it should succeed—as it came near to doing—and the French fleet should be destroyed, use of the absolute command so obtained would be made greatly to increase both military and economic pressure. This I look upon as one of the masterpieces of combined strategy. The scheme proceeds progressively from objective to objective, the two services concentrating their combined efforts upon one thing at a time in its proper order. Toulon did not fall ; but the failure did not lie with Marlborough but with others, who, unlike fleet and army, failed to put into practice that first principle of war—concentration of effort upon a single object.

While military victory was thus the predominant aim, steps to weaken the enemy by investment were not neglected. By 1709, besides the effects of the military blows of the preceding year at Oudenarde, Lille, Italy, and Port Mahon, France was suffering greatly from the effects of the operations at sea. Her finances were crippled, and she could neither buy nor, if she could buy, import, the food she needed. Aggravated by a failure in the harvest, her distress was so great that the great Duke even considered whether further military operations would be necessary, and if it would not be sufficient to complete the process of exhaustion

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by sea warfare alone. The food supplies from the African coast were intercepted: orders were drafted that all Genoese ships exporting corn to France were to be intercepted: while the Dutch and English forces scoured both the Baltic and the Mediterranean. And this disposition of force was possible only because the French main sea-fighting forces were rendered unable to interfere by the British battle fleet. •

The three examples of sea warfare thus roughly sketched are of wars in which victory—or peace—was to be obtained only by bringing pressure on the enemy nation as a whole. But this is not the only form of war. When the possession of territory beyond the frontiers is in dispute there is no need to invest or assault the mother kingdom. Thus, when the United States in 1898 wished to change the government of Cuba they were not obliged to attack either the external or the internal communications of Spain or to attempt to destroy the army in Spain. To drive the Spanish troops out of Cuba was enough. So, too, when Italy desired to obtain Cyrenaica, it was not necessary for her to bring economic pressure upon, or to invade—in other words, to invest or to assault—Turkey. Defeat of the fighting forces in the disputed area, and occupation of the country, gave

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her what she needed. Japan in her struggle for Korea, Britain in hers for Canada, were in a similar position. Neither the Russian nor the French peoples were subjected to pressure nor the main Russian or French armies destroyed. They were rendered unable to regain possession of their territories.

In wars of this character, with a limited object, the same general proposition as to the two measures holds good. The object is attainable *directly* by investment or assault. But the enemy's fighting forces in the area concerned are not only the immediate, but also the final objective of the national effort. The national life of the people is not, as in wars of the other character, an objective. The captures of Cuba, Canada, Korea, or Cyrenaica were completed by the defeat of the enemy's armies in those territories: that is, by assault. On the other hand, Korea, when invaded by Hideyoshi in 1592, was saved by investment of the Japanese army, the Korean navy cutting off its communications and investing it, forcing it thereby to evacuate the country. Destruction of the Japanese fleet in the Russo-Japanese war would similarly have compelled the surrender of the Japanese army. All of which can, of course, be said shortly in a few words. An army is dependent on its communi-

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cations, and when those communications are by sea, their severance is fatal. It surrenders to investment.

In these wars the main conflict was confined, as it were, within a ring, held by the fleet of the superior sea power. The *ultimate* object of the sea warfare was to enable the army to destroy the opposing army. The *immediate* object, or if you should choose, as you may, so to call it, the course of action for attaining the ultimate object, was to disable the enemy's naval force—using the word 'dis-able' in its widest sense of rendering it unable to oppose : and to that object attention must be exclusively directed. Short cuts to victory, attempts aimed at the final objective, have an almost unbroken record of failure. The doctrine of victory by evasion, direct attack upon the people's life without overcoming their armed forces, can find no support in the experience of war. It is a theory only, yet to be proved.

The direct efforts of the operations in sea warfare are thus properly concentrated upon the disablement of the opposing navy. The result of the efforts, if successful, is Command. Command enables armies to be moved and assisted : and command may, but does not necessarily, automatically result in appreciable economic pressure on the

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enemy. Whether it does or does not, and the degree to which it operates, depend upon the extent to which external supplies are essential, and upon the position which circumstances oblige the covering force to take up. In the case of Great Britain, when at war with France, Holland, or Spain, the covering force had necessarily to be in touch with the enemy at his point of departure—the home base—for besides covering the expeditionary force it had to guard against the counter-blows, always attempted, of invasion and trade attack. In that position it acted in prevention of trade. Some thirty per cent. of French foreign trade, for example, was with their West Indian colonies, of which a large proportion entered the western ports—and so, automatically, economic pressure resulted from the fleet occupying the commercial approaches which corresponded with the military exits.

But a covering force need not necessarily be off the points of departure, and it may exercise but little economic influence. The American squadrons, for example, in the war with Spain in 1898, produced no great economic pressure, except in so far as the stoppage of the Cuban trade was concerned. There was no need for the American ships to cross the Atlantic. Their covering forces

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were localised in the West Indies, off Cuba itself, where the objective—the Spanish garrison—was to be found. Unlike Britain, the United States had no interests in the East Atlantic to cover—a kingdom to defend from invasion or investment—which could only be done from a station in close touch with the main enemy fleet. If such Spanish forces as remained in Europe were to be used to influence the course of events in Cuba, to Cuba they must come. And there the American forces would receive and fight them.

The Japanese, in a similar way, confined the sea warfare to the Eastern seas. No attempt was made to deal with the Russian naval forces in Europe until they should arrive in the East. Admiral Togo met them in his home waters, with what, quoting a Chinese writer on war, he called 'the advantages of the situation'—that is, close to his own sources of supply. He was able to do so because no interests were thereby uncovered and he had the certainty of being able to meet them there—the same reason, *certainty*, which caused Lord Howard of Effingham to advocate the exactly opposite course of seeking the Spanish fleet in its home waters, as there was a risk of missing them if they came to the Channel.

Thus, economic pressure may take place though

the object is purely concerned with assault; but it will vary according to circumstances.

This form of pressure is, however, both slow-acting and liable to produce untoward results for its user. Many factors affect it, of which the most influential are neutral rights. The greater the effort made to restrict supply, to make investment complete, the more are neutral interests affected and the greater become the possibilities of adding to one's enemies. The power aiming at reduction by investment is invariably exposed to neutral resentment to a degree which does not obtain on land, although the occupation of a country produces precisely the same restrictions to trade. The risk of neutral intervention is, therefore, always present. It may lead to active armed intervention, as it did in the case of the Armed Neutralities of 1780 and 1800. It may lead to such action as Mr. Page feared might be taken by the United States in the late war—refusal to supply munitions and supplies essential for the conduct of the war. The attempt of Germany to make investment complete by means of submarine operations against all mercantile vessels without discrimination brought the United States into the ranks of her enemies. It is not my purpose to discuss International Law, nor what are 'rights'

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or the different interpretations of them. It is enough to point out the fact that unrestrained use of the power of command at sea may defeat the very object of the operations ; and instead of weakening the enemy, strengthen him. In 1780 the stoppage of contraband was considered so essential, that the Government of the day preferred the addition of Holland to our enemies to allowing France to receive those supplies. It is proper to say that this did not pass without severe criticism. In the late war we walked like Agag : and it is not unworthy of notice that those Powers who profess most strongly the sacrosanct character of what is improperly called ' private property ' when they are neutrals, when they are allied to a naval Power which possesses ability to invest not infrequently prove *plus Royalistes que le Roi*.

To form plans for war, and particularly (because the opportunity is greater) in sea warfare, which exclude consideration of the neutral, is the height of folly. The German did it on land and sea. His violations of neutral rights were the direct causes of adding Great Britain, Italy, and the United States to his list of enemies. And in this connection I would point out—though it may be a digression—that there is already a tendency to forget this lesson. We hear of air-bombing and poison-gas attacks upon

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civil populations. It is true that neutrals, for a long time, took no active steps to prevent the murder of their nationals at sea, but in the end the most powerful neutral intervened. Similarly, neutrals may, and should, have something to say if their people in foreign cities, and particularly their diplomatic and official representatives, are the victims of poison-gas bombs dropped in the neighbourhood of, say, the Albert Gate or the Via Vente Settembre. Moreover, such action leads invariably to retaliatory action, and the retaliatory power possessed by a fleet is very considerable in certain circumstances. Once retaliation is provoked, and begun, the Aristotelian object of war—a good peace—becomes unlikely of fulfilment.

The longer a war lasts the greater become the opportunities for friction. Contraband lists, under the influence of invention and the application to purposes of war of materials not hitherto included, expand; and every expansion tends to produce protests from those whose commercial activities are correspondingly contracted. Since a decision at sea establishes definitely the command, enables measures of blockade recognised by all Powers to be enforced, expands the power of assault, and tends to remove the temptation that a balanced situation offers for intervention, it is most desirable not only

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that no opportunity of a measure for weakening the forces should be missed, but that a decision of strategic influence should be obtained as early as possible. How long a war of which 'investment' is the characteristic strategy might last is shown by the power of this complex manufacturing country of ours, dependent for its life on its external communications, to support a reduction of its imports. In December 1917 British imports had been reduced from some thirty-six million tons, excluding foodstuffs, to some eight million tons, excluding foodstuffs and munitions.¹ How much more immune from this form of pressure must be a country so situated as to be able to conduct a large proportion of its trade by other channels than those direct to her seaports. Investment is, in fact, an auxiliary of the highest value ; indeed the 'alliance-value' of Britain is largely due to it, as every war has shown. It is to be attained only, as every result of war is to be attained, by disablement of the enemy's fighting forces. If fighting is indecisive, investment will be either incomplete or inappreciable, as it was in the War of the American Revolution, throughout which French trade with the West Indies continued under convoy with little or unimportant reduction. When battle has destroyed

¹ Salter, *Allied Shipping Control*, p. 289.

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the means of protection, as Anson's and Hawke's victories did in 1747, it becomes rigorous, and an effective contribution to the process of compelling the enemy to compliance. The grinding effects of sea warfare are too frequently lost sight of in the more dramatic campaigns on land, and the history of wars tends to become distorted thereby.

It is, however, one thing to say a decision is required, but another to bring it about; and therein lies a fundamental difference between land and sea warfare. An army has the power of attacking, with its own resources, the position held by another army—a Plevna or a Hindenburg line. A navy cannot. If an enemy navy, desiring, owing to weakness or any other cause, not to fight, takes post in harbour, no fleet without another arm can destroy it materially—though it may destroy it morally—except when, as at Santa Cruz or Tenerife when Blake attacked them, or Algiers in Exmouth's fight, the defences are of less even than a second-class order. If a quick decision is required it can only be brought about by combined action. Batteries on shore have always been the masters of ships' batteries. 'Un canon à terre vaut un vaisseau à mer,' says a French proverb; and the English and American sayings on the matter express the same intention though they give a different proportion.

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Changes in material have made no difference, though technicians have imagined they have done so. The relation between ships and forts that was true at Cartagena, Chatham, Brest, Cadiz, Vigo, Ferrol, and Cronstadt in the seventeenth, eighteenth, and nineteenth centuries is equally true in the twentieth, whatever technical enthusiasts may imagine. It may seem unnecessary to refer to so obvious an axiom, which was a commonplace to every serving officer in the old wars, were it not for the fact that in almost every war it is forgotten. A fleet in the eighteenth century is ordered by the Privy Council to force its way into Ferrol and destroy a Spanish fleet; in the nineteenth century a clamour is raised because the Baltic fleet does not attack Bomarsund and Cronstadt; in the twentieth a fleet is sent to attack the Dardanelles. 'If Sir Robert Peel,' wrote Captain Sullivan from Bomarsund, 'had studied the naval history of the French war he would have learnt that Nelson never attacked a battery with ships, except very slightly on the first day at Ténérife, when, thinking it impossible to succeed, he gave it up and tried to carry the place by storm.'

Since the desirability of an early decision at sea has always been obvious to our predecessors, command at sea (and it cannot too frequently be

repeated) being the first requirement of Britain in any war, and since our enemies have so frequently adopted a Fabian strategy of defence, it is natural that either plans should have been put forward, or attempts actually made, to reach the enemy fleet in its harbours. Thus in 1694 a combined expedition is sent against Brest, which fails terribly in Camaret Bay from worse than mere want of secrecy. Marlborough's plan of campaign of 1707 is informed with the same idea. In 1741 Admiral Norris puts forward a proposal to land the expeditionary force to destroy the Spanish fleet in Ferrol. In 1758 Wolfe supports a scheme for a combined attack upon the Isle of Aix because it will force the enemy fleet to sea and 'inevitably brings on a sea fight which we ought by all means to aim at.' In 1799 a proposal is considered for sending an army to Brittany to destroy the French fleet at Brest. The expedition to the Helder had the destruction of the Dutch fleet as one—the only rational one—of its objects. The weak attempts on Ferrol and Cadiz mark the same idea. In modern times we have the monumental destruction of the Russian fleet in Port Arthur by the Japanese army.

The question not unnaturally arises : 'On how many occasions were attempts made thus summarily

to destroy an enemy's fleet : if and when made how often were they successful ?' Of those quoted—the list is not exhaustive—the Helder and Port Arthur alone were successful ; of the others, some were proposed and rejected and some failed in their execution. Brest was not attempted in 1799 because we had not the troops available. Ferrol and Cadiz were looked at, but half-heartedly ; for there was no Wolfe to carry them through. Whether, however, an attempt be practicable is clearly a matter that cannot be decided by one service. Combined study of the problem is needed, and we find ourselves, as we must always find ourselves when we think with any precision, brought back once more to the fact that land and sea warfare are not separate things, and that plans for war cannot be germinated in the womb of any one department.

If, upon examination, assault by joint land, sea, and air force appear impossible—as the foregoing experience shows that it may—other means of injuring the fleet are naturally sought for. While none may offer such prospects of decisive effects, others may promise to procure an effective weakening, perhaps material disablement, which will lead in turn to moral disablement of the main body of the enemy. In the past the fireship was one ;

Lord Cochrane's attack on Aix roads is the best known example of many. The invention of the torpedo opened up a new possibility. Torpedoes were powerful instruments which could be carried in small and very fast craft, difficult to hit at night, which possessed the advantage of apparent cheapness. Some successful or partially successful torpedo attacks have been made—the sinking of the *Blanco Encalada*; the Japanese attacks at Wei-hai-wei and off Port Arthur; and in more recent times, when a still smaller vessel, the 'coastal motor boat,' offering a diminutive target, came into existence, we get the Italian attacks on the Austrians in their harbour and on their squadron at sea, and the British at Cronstadt. Submarines have made attempts, but the qualities that render submarines effective are of little assistance in forcing the defences of harbours, particularly of those of which the navigation is difficult. Aircraft, which in reality are merely torpedo craft which move above the surface of the water, will undoubtedly play a part in the future; but those who know how poor is the material record of the torpedo as a weapon, and who recollect that to every one of these forms of attack an antidote has been invented, will not allow their hearts to run away with their heads in the belief that a new and supposedly inexpensive

weapon has rendered the existing ones obsolete. The air torpedo craft, however, inherit the moral effect that the surface and the submarine torpedo craft have exercised. They will unquestionably have their successes, provided their operations are planned and conducted in co-operation with the other naval units : and their influence on war at sea is likely to be as far-reaching as the introduction of any other new form of fighting vessel has always been. The study of the action of that part of the navy which flies is of the highest importance ; but it must be conducted on the principle of co-operation of arms.

Thus it is not improbable that, as before, the enemy fleet in its harbours will be secure against destruction, and that such damage as can be done—for some will undoubtedly be done—to it will not be decisive. The main body of fighting ships will, in that case, continue to constitute a latent danger. Convoys of troops or trade will be in danger from attack by it. The capital ship, so much derided by those who fail to appreciate its true significance and function, and measure its value by the illusive standard of the number of ' battles ' it fights, forms a constant threat to the trade and the detachments employed at sea : and what that is, anyone who had had the practical

experience of escorting the Scandinavian convoys during the late war well knows. Let me illustrate this in a few words. Let it be supposed that those who consider the battleship a useless encumbrance and 'no use during the war' had been so far-seeing as to procure its abolition before the war; and that, following victory on land (which, in the absence of the British main fleet, without whose sanction the Expeditionary Force could never have reached France, would have undoubtedly occurred), the German battle fleet had been established at Brest. Would the convoys of our vital imports and exports, escorted by cruisers, destroyers, aircraft, or trawlers, have been able to come up Channel? Scarcely a shipload of commerce would have reached London, and the city's population could by no possibility whatever have been fed. Similarly, if the Austrian battle fleet had been free to come to sea, traffic in the Mediterranean would have ceased. Malta might well have been starved into surrender: for I do not know by what means its supplies of provisions could have been replenished. This country would in fact have collapsed within a few days. It should seem unnecessary to point out things so obvious were it not that there are still those who believe the battle fleet 'did nothing' because it was not constantly fighting battles: and who

imagine that the new weapons can take the place of ships : or, in other words, that evasion can take the place of fighting.

If, therefore, no means can be devised to destroy, materially, the enemy who adopts the strategy of the ' Sally Fleet ' in his defended ports, he must be prevented from being able to do any harm if he does sally. The fleet is ' blockaded.' Though called ' blockade,' the intention is not to confine him to harbour—except in certain particular circumstances, such as one phase of the passage of the Japanese army to Korea—but to bring him to action if he comes out. The requirements of this measure are that the fleet shall occupy permanently a position in which it can maintain superior force which shall be capable of intercepting and bringing to action, under circumstances favourable to victory, the enemy fleet before it can put into operation any attempt it may desire to make. ' If I cannot get at you in your harbours, I will aim at doing so without fail if you put to sea.'

The fleet, in fact, takes up a covering position. But this strategy has a disadvantage of which seamen are well aware, for they have had ample experience of it in all wars. The enemy fleet enforces upon its opponent a disproportionate expenditure of force, to the detriment of his power

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to take offensive action and to defend his trade. The enemy fleet, in fact, forms a very powerful containing force.¹ For in order that a force of battleships of at least equivalent strength shall be permanently ready, there must be a margin for relief; since ships must absent themselves for docking and repairs. And this margin reaches a respectable figure. In the old blockades off Brest it touched twenty-five per cent. at times; and the farther the base of repair and the smaller its capacities for repair, the higher it must be. A fleet, moreover, is not merely composed of battleships. It includes cruisers and torpedo craft (using, as I always use, the words 'torpedo craft' in their proper significance of all craft whose principal weapon is the torpedo, whether they act on, above, or below the surface of the water). All these, too, are contained, and hence in part arises that shortage of cruising craft which has been the complaint of every admiral in every war: yet which in peace we so consistently ignore that every war finds us short of the number of 'cruisers' we need. Those cruising craft are needed to deal with the sporadic warfare by means of which our enemies have

¹ The word 'contain' is used often, with great looseness, to refer to a blockading fleet, which is said to 'contain' the enemy. This use is militarily incorrect.

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constantly tried to weaken our financial strength, to force us to dissipate our efforts, and to procure concentration on their own.

If then, unable to destroy the enemy by assault, a navy is obliged to fall back on this undesirable alternative of so-called 'blockade,' our powers of commerce protection are diminished. In the late war the Allies lost about $10\frac{3}{4}$ millions of tons of shipping, and it is within the recollection of everyone how near we came to collapse largely owing to shortage of shipping to carry, import, and export our trade and troops because we could not sufficiently defend it. There can be no question whatever that if we had been able to increase the security of trade by the employment of more cruising vessels, in particular of the lesser types, much of this loss would not have been incurred. This is shown by the very fact of the diminution in losses when the convoy system was in full swing. The convoy system required an ample supply of vessels of the smaller classes, and until they were available in sufficient numbers, that method of escorting vessels of defence could not be effectively used. Every cruising vessel 'contained' by the enemy's fleet was a vessel withdrawn from the protection of this trade, on the continuance of which the fate of the Entente depended. This containing effect

was noted with legitimate satisfaction by Prince Bülow. 'Our battle fleet,' he wrote,¹ 'forces the main strength of the British Navy to remain in the North Sea and thus prevents England from using her full strength at the Straits, in which submarine warfare has assumed overwhelming proportions.'

Blockade, besides injuring the *moral* of a fleet, may weaken it materially. Even though it remain in harbour it requires supplies ; and if the supplies come by sea, as many of them must, their interception becomes possible. In the long struggle with France an incessant and pertinacious small-craft campaign was conducted inshore, with the definite object of depriving the fleet in Brest of the stores it needed : and with such success that as a base for large squadrons Brest became useless. The inshore operations of the Japanese off the coast of China produced a similar material disablement of the Russian squadron.

It is not to be supposed that either successful assault or 'blockade' will make a clean sweep of the enemy from the face of the sea. However close the observation, and however early it may be put into force, some enemy ships will get into blue water. The measures for dealing with those

¹ Von Bülow, *Imperial Germany*, p. 37.

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will be referred to later. The means necessary to enable the fleet to establish itself in and maintain its place of observation are next for consideration.

The first things a fleet requires are a harbour, within the principal naval theatre of war, wherein it can lie with security, and means, within as short a distance as possible, for repairs and storage. In short, a base of operations and a base of refit. The establishment of bases is a factor in grand strategy.

Bases have developed according to our need. Deptford, Portsmouth, Woolwich, Gillingham Reach, Chatham, Devonport, Rosyth, Cork—to take some of the bases within the kingdom—arose according to the enemies of the time and the form of strategy employed. Devonport, for example, is usually connected with the strategy of close observation of Brest. Abroad, on every station where British interests called for defence, bases to supply their needs grew—Royal Naval bases in the West Indies at Antigua and Jamaica ; a base for the East India Company's navy, used also by the Royal Navy, at Bombay.

Until late in the seventeenth century the country was without a Mediterranean base : for until our interests in that sea required the presence of a fleet no base was needed. No sooner, however, in

Cromwell's time, did it become necessary for a British fleet to procure respect for the interests of the pariah British Republic than the need for a base in those seas was felt. Examination was made by Cromwell's sea officers at Gibraltar, Buzema, and Tetuan. None were then acquired, but the need was not lost sight of. Five years later it was fulfilled when Tangier came into our hands, only to be thrown away, for reasons we need not examine beyond saying that they had no connection with sea warfare or strategy, after twenty-two years of experience had shown its value. Pepys shows himself well aware of the need : in his naval minutes he says 'That in case of a war with France we shall be driven wholly to give over trade ; they will be able so to infest us with privateers near home, and command all in the Straits, *forasmuch as having no ports of our own there*, it will be impossible for us to bear the charge of maintaining fleets there to answer the force of France in that sea at their own ports.' ¹

The next war in Mediterranean waters, therefore, found us once more without a base, but with the use of Cadiz, such as it was. The value of a base, as I remarked earlier, is measured in part by its distance from the objective, in part by the

¹ *Samuel Pepys's Naval Minutes*, N.R.S., vol. lx, p. 37.

facilities it offers. Cadiz was far from the stations⁹ of the enemy fleets within the Mediterranean. How much a base nearer the enemy was needed was clear, and the capture in 1704 of Gibraltar, valuable as it was, partially, but partially only, supplied the need. It then had no repairing facilities and it was a long way from Toulon. The great land and sea campaign in Provence, to which reference has already been made, showed clearly that it was not possible to exert our whole strength unless the fleet could be maintained permanently in the Mediterranean in a suitable position. Both maintenance and position could be afforded by Port Mahon in Minorca, and Marlborough's unerring eye fell upon it, and he writes in 1708 : ' I am so entirely convinced that nothing can be done without the fleet that I conjure you if possible to take Port Mahone.' So Mahon was taken, and with Mahon and Gibraltar the fleet could act with terrible effectiveness. ' With this conquest (Mahon) and Gibraltar [wrote Saint-Simon] the English found themselves in a position to dominate the Mediterranean, to pass the winter there with their entire fleet, and to blockade all the ports of Spain in that sea.' Admiral Sir John Norris, writing in 1740, said of Mahon that ' if once lost we could never retrieve [it] and without it in a French war

‘there is no port where we could support a superior fleet against France and Spain, and must in war be the loss of all our Mediterranean trade.’¹

Mahon was eventually replaced by Malta, and Malta and Gibraltar thereafter furnished the maintenance bases. Operation bases came into existence according to circumstances—Hyères, Villefranche, Maddalena, Palermo, Mudros, and a host of others well known to the small craft officers in the last war.

Turning to the Eastern seas, while Bombay was long our base in the Indian Ocean, its distance from the principal theatres of military operations in the struggle with France was a great disadvantage. Victory in the great campaigns on the Coromandel Coast in the Northern Sirkars and Bengal depended upon command of the sea, and the naval headquarters, Madras, could not be used for three months of the year. The operations at sea bore the same relation to those on land as the foundations of a house do to the rest of its structure. As a battle squadron supports cruiser forces and enables them to exercise control, the fleet in those Eastern campaigns enabled the armies in India to exercise control. In its absence, enemy troops could be introduced, sufficient to turn the scale

¹ Diary of Sir John Norris, Jan. 24, 1740. B.M. Add. MS. 28132.

against the British forces. Owing to the distance of Bombay from Coromandel enemy fleets more than once arrived on the coast before the British, and command passed into the hands of the enemy. A harbour secure from the north-east monsoon was badly needed. No sooner, therefore, did Holland intervene, in 1780, in our struggle with France, than Admiral Hughes put forward proposals for the capture of Trincomali, the only harbour in which ships could ride through the north-east monsoon; and it was taken by the seamen and marines of the East Indies squadron, with a labour force of 500 sepoy from Madras. Failure to recognise the importance of the base led to its loss. The Select Committee of the Madras Council ceased to supply an adequate garrison, and, during a temporary loss of sea command, it fell to an attack of Admiral Suffren: and thereby our position in India was more gravely imperilled than it ever had been before, or has since been. Trincomali was retaken in the next war, and developed as a strong base. Standing as it does at practically the focus of the steamship routes of the Indian Ocean, it is admirably situated for the purposes of the squadron engaged in the defence of trade. By itself, however, Trincomali could not supply the strategic needs of so widespread an area as the

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Indian Ocean, and the squadron in those parts was divided, in 1863, into two divisions, the Western based on Bombay, the Eastern on Trincomali and Singapore. The cession of Hong Kong in 1841 gave a much needed base for the squadron in the China Seas. It is a far cry from the little yard at Deptford which served the needs of the Royal fleet of the sixteenth century and earlier, when the King's ships were based at the Tower of London, to Hong Kong or Singapore in the Eastern seas; yet the process has been one of logical development throughout.

Thus, sketched in only the very broadest outline, it is possible to see how, with our spreading interests, bases to enable the navy to protect them have necessarily been developed. Two hundred years of development can be traced. Ideal positions fulfilling the needs spoken of earlier have not always been procurable and repair facilities have sometimes had to be so distant from the zone of operations as to prejudice command. The scale upon which the bases have been furnished depends directly upon the foreign naval forces in the area concerned. Where nothing but cruisers are maintained, a base for cruisers suffices: where ships more powerful than cruisers are maintained—as, for example, when Russia had a battle squadron in the China

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Seas—the base must be capable of maintaining ships capable of meeting them, otherwise the cruisers will not have the cover without which, as I have tried earlier to show, they cannot fulfil their functions.

Summarising what I have tried to say, my remarks amount to this :

Warfare is a process of compelling compliance on an enemy people. The fighting services are the instruments used to achieve that common object. The object being common, the efforts must be co-ordinated. Sea warfare is thus a part of the whole, not to be considered as a separate and unconnected matter.

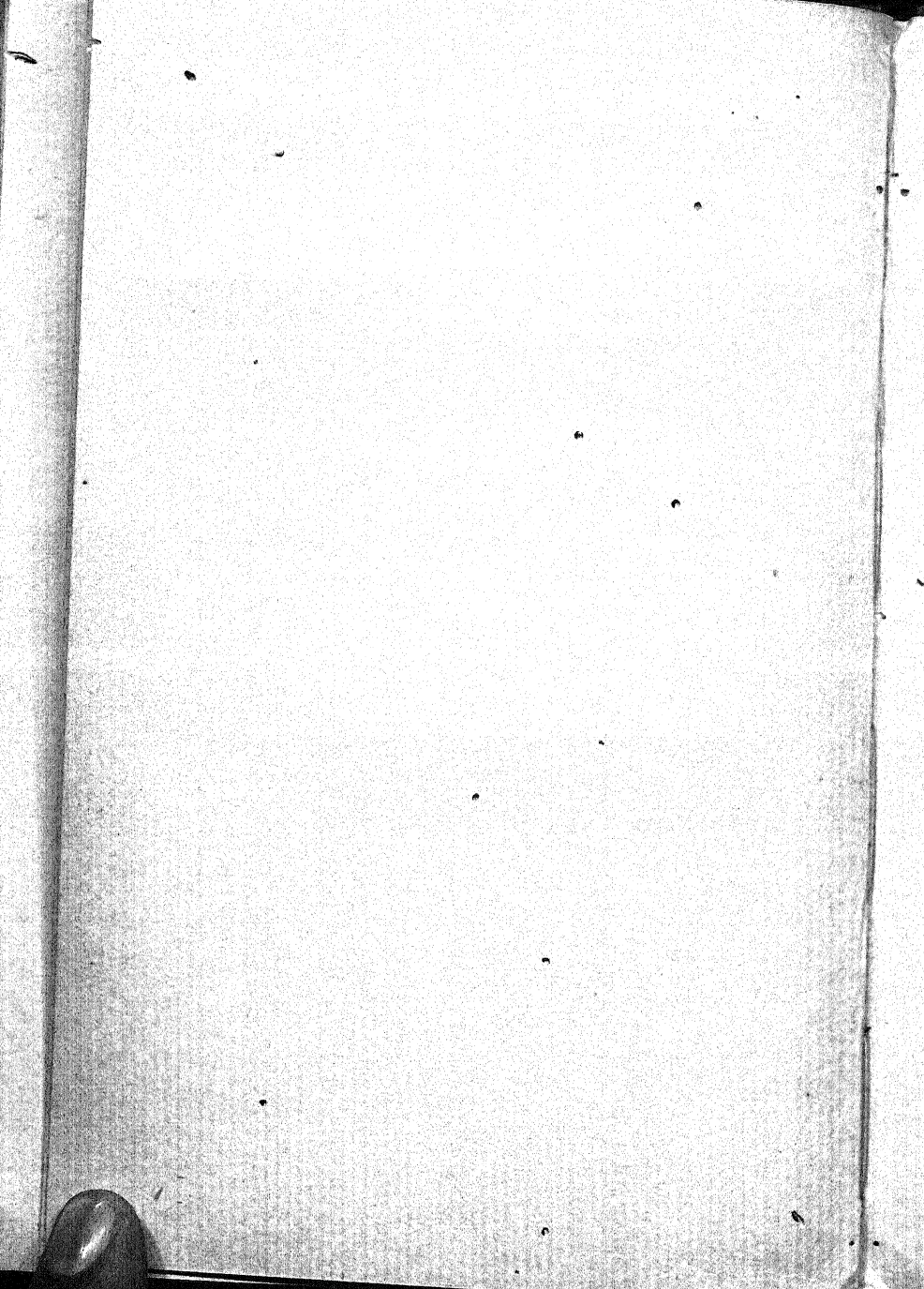
An enemy can be compelled to compliance by investment or assault. Sea warfare is capable of conferring the power of investment and of contributing to assault the power of mobility. Neither investment nor mobility can be complete so long as there exists an effective body in a condition to oppose movements. The first business in sea warfare is, therefore, to disable that body. The most complete disablement is material destruction : but paradoxically the greater the superiority at sea, the less becomes the capacity materially to destroy, since the enemy shelters himself where the naval forces alone cannot destroy him. But

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•he may be destroyed by combined effort. If combined effort is impossible, the superior force falls back upon attempts to weaken : and upon preventing the inferior from hampering his actions of investment and movements at sea. To do this, he masses his naval forces in positions close to those where the enemy has taken shelter. He needs means to maintain them in those possessions : and of those means the first is, a place where he can lie—a base. Thus to enable the fleet to act it must have bases ; and those bases arise in those areas in which there is a need to defend British interests.

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II



II

My last paper dealt with the ultimate objects in sea warfare, the broad governing principles of the use of naval force, and the conditions essential to the exercise of sea power. Concentration of effort was shown to be as primary a condition of success as it is in every other human activity. The primary objective of the fighting forces is, therefore, the principal concentration of enemy force, of whatever type or types of vessels that concentration may consist. Finally, the concentrated force needs the means to maintain itself in contact with the enemy ; that is, a base : without which no force, however strong, can exercise continuous control. Those are the foundations of all the operations of sea warfare : and to attempt to build without them is building upon sand.

Pressure can be brought to bear, as we have seen, on an enemy people by stoppage of sea-borne commerce. There are, broadly speaking, two methods by which commerce can be interrupted (though 'methods' is not a strictly correct term to use)—'blockade' and 'sporadic warfare.'¹

¹ Called otherwise the '*guerre-de-course*.'

The term 'blockade' is also admittedly inaccurate, but it is one for which at present we have no satisfactory alternative. It is necessary to recognise this differentiation, as mistaken conclusions arising from confusion between the two are drawn as to the influence of what is called 'war upon trade.' It is argued that trade at sea should be free in war: and the syllogism upon which this opinion is founded runs thus: (1) The 'guerre-de-course' has never succeeded in bringing about a decisive result in war. (2) The 'guerre-de-course' is the measure by which trade is attacked in war. (3) Therefore attack upon trade has never produced a decisive result in war.

The first premise is correct; the second is incorrect, and consequently the conclusion is wrong. Sporadic warfare is not *THE measure* by which trade is attacked, but *one of the measures*. I shall refer later to its influence.

A power superior at sea, and possessing the means of exercising its superiority—bases—can station its forces on the enemy's threshold, or in positions from whence they can control the approaches. This brings commerce to a standstill, and this we call 'blockade.' Such blockades as those in former wars off the coast of France or the Southern States of America are not practicable

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to-day, on account of changes of material ; but the control can be exercised in another form. It is still the method which a power superior at sea will desire to use if investment is to form one of the offensive measures in a war. Do not let me convey the impression that 'blockade' or 'extension of contraband,' or whatever term is used, is easy to apply effectively simply because of superiority at sea. It is not. The late Lord Loreburn, a strong opponent of capture at sea, put forward weighty and reasoned opinions against it, and although the late war gave practical evidence that pressure could be effectively applied in the circumstances of that war, many of the limitations which Lord Loreburn urged are still operative. Nelson himself, an officer with a very remarkable knowledge of matters concerning trade, said 'We English have to regret that we cannot always decide the fate of Empires on the sea' (note that characteristic qualification in the use of the word 'always')—and what he said is true to-day. But when land frontiers are blocked by the armies of allies, as were those of Germany, and when difficulties exist or are placed in the way of importing or exporting through neutral ports, so many leaks are stopped that a situation amounting to one of blockade exists. Only a power superior at sea can produce this situation.

An inferior sea power, on the other hand, believing itself unable to overcome the enemy's fighting forces, if it wishes to weaken the enemy by interruption of its sea-borne supplies can only operate against them by sporadic warfare. Too weak to lie in, or close to, the main avenues of approach where the enemy is strong, he must seek his quarry farther afield, on the separated instead of the concentrated trade routes. Blockade strikes at the root, sporadic warfare at the branches. The latter is effective only if it makes captures so numerous as to reduce the flow of commerce below the amount necessary to maintain the enemy nation. The stronger sea power has no need to use this method ; indeed, it has good reason not to do so, since it involves a dispersion of force when what is needed is concentration against the enemy's fighting forces. Dissipation conflicts with the fundamental principle of concentration of effort and force. But the weaker sea power, which, however much it may concentrate, is still unable to establish superiority, is inclined to turn to sporadic warfare. Although in all the wars of which we have authoritative record serious injury has been done by this form of warfare, no navy up to the present which has made it the principal feature of its sea warfare has succeeded in crippling commerce to the degree with which

'blockade' has crippled it. Losses have been inflicted to so grave an extent as seriously to prejudice the superior power's capacity to continue war; the 'guerre-de-course' after 1805 and the submarine operations of the last war are cases in point. Nevertheless, in both cases it proved possible, by the adoption of measures in conformity with the principle of concentration of effort, to defeat the campaigns.

This form of warfare has results beyond the actual losses of shipping, and it may be conducted with the definite aim of those results. Enemy vessels scattered over the ocean operating against trade infallibly produce diversion of force: and in plans for such warfare in the past it is not uncommon to discover one aim of the attack upon commerce by squadrons and ships in open waters to be to effect a dispersion of British force which shall result in such a weakening of the concentration as to open the way for the counter-blow of invasion.

How great is the diversion produced by even a small number of vessels is shown by endless examples past and present. Two German light cruisers at large in the Indian Ocean were responsible for the diversion of not less than a score of similar vessels in search of them; Von Spee's squadron when at large, unaccounted for, affected the disposition of some five times their number: and the very small

number of submarines operating at any moment in the Channel used up the services of a vast number of vessels of the small class of cruisers which we call destroyers and sloops. Astonished as many people were at these heavy demands, there was nothing either new or peculiar in them. In the old wars the privateers from St. Malo, Cherbourg, Le Havre, Boulogne, Roscoff, and the many French Channel ports forced upon the British the employment of over 1,500 small craft to defend the trade in homewaters.

There are those who consider that, since Great Britain is a great commercial nation, and since the defence of her trade calls for so great an expenditure of force and money to maintain it, it would be to her interest to abandon 'trade attack'—provided others would do the same. It is true that thereby we should be furnished with a shield. But a sword would be taken away, as Lord Salisbury pointed out in commenting upon the weakening of British power which resulted from the Declaration of Paris.¹ That power, which, as the history of all our great wars past and last plainly shows, has been the basis of an alliance value, has contributed materi-

¹ 'I believe that since the Declaration of Paris, the fleet, valuable as it is for preventing an invasion of these shores, is almost valueless for any other purpose.'—*Hansard*, March 6, 1871.

ally towards compelling compliance upon an enemy, and without which, so far as it is possible to judge, the Entente could not have been victorious in the late war, would be gone. The power of investment would be removed, or its effects confined to purely military areas ; which no one with experience will consider practicable in the present state of land communications. To abolish the power of investment by sea, while leaving it untouched on land, is the negation of logic. Moreover, to take from a maritime power the right to exercise pressure in this manner leaves her with no offensive weapon except the only alternative measure of enforcing pressure—assault. Assault calls for military forces ; and unless this country is to depart from the policy which has carried it successfully through three centuries it must either become a military nation or make war, as no one has ever yet made it, by defensive measures alone. It is, of course, true that in many wars, the lesser ones in which both the object and the scope were limited, military operations have decided the issue and military force the predominant factor—such wars as those with lesser or savage powers. But it is the wars of coalitions which have decided the fate of the world and of the Empire, the wars with the great perturbators (to use the phrase of Captain Castex)

Louis XIV, Napoleon, and Wilhelm II. In those, without the power of investment we could not have prevailed.

The shield, too, would be a shoddy concern, a thing of paper : and of very thin paper at that. When it is so frequently argued that it is so impracticable to set a limit upon the use of any weapon that it is impossible by agreement to prevent aircraft from bombing operations, how is it possible to argue that any reliance could be placed upon an agreement not to attack so tempting an objective as the vital artery of British trade ? By hypothesis, our cruiser force would have been reduced below the standard necessary for its defence, and to restore it before the fatal effects had been produced, and the nation starved, would be impossible ; or even before the neutral, with whom lies the decision in the case of infractions of international agreements, would have time to act, even if he could be depended upon to act at all.

Defence against investment by 'blockade' is furnished, and can only be furnished, by superior force at sea, properly used. Defence against investment by sporadic operations is afforded in several ways, of which three may be called measures of major strategy. Each depends on the principle of destroying the armed forces of the enemy.

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Before the armed forces can be destroyed they must be located, and all the measures consist in sending fighting ships to the places where the likelihood of finding the enemy, or what he depends upon—his 'communications'—is greatest. These are, the ports in which he shelters and victuals, the areas in which he can do most harm, and alongside the merchant ships that form his quarry. The methods may be shortly described as capture of his bases, cruising, and convoy.

For the same reason that, in the case of the main concentration of force, the most effectual and rapid means of producing disablement is to attack it in its bases, so lesser concentration in outer seas is most effectually disabled. Commerce destroyers, no less than main fleets, require to rest, to re-provision, to refresh. They may be, as many have been, able to exist for some time, in small numbers, upon the proceeds of their captures at sea : and successive cruises may be made, of comparatively short duration, from home bases. Deflection of force may be procured by such raids : but serious injury to commerce can be prevented ; and such operations, unless they form an essential part of other operations conducted with a definite strategic object, will not produce decisive results. To capture the oversea bases of the enemy is, therefore,

were, or could be, taken, to prevent the advance of Tourville in greatly superior force into the Channel. Torrington hoisted his flag in the Downs at the end of May, and even then the Dutch contingent had not joined in the numbers promised. Hence it was impossible to keep scouts out to the westward as the Dutch had undertaken to do, and the first definite intelligence that Torrington received of the advance of the French was the information that on June 23 they were anchored in great force to the westward of the Isle of Wight. Three days later, having in the meanwhile received a Dutch reinforcement bringing his force up to fifty-five sail of the line and twenty fire-ships, he offered them battle in that position, but it was declined. His own comment on this hazardous adventure may here be quoted : " I do acknowledge my first intention of attacking them, a rashness that will admit of no better excuse than that, though I did believe them stronger than we are, I did not believe it to so great a degree. . . . Their great strength and caution have put soberer thoughts into my head, and have made me very heartily give God thanks they declined the battle yesterday ; and indeed I shall not think myself very unhappy if I can get rid of them without fighting, unless it may be upon equaller terms than I can at present see any prospect of. . . . A council of war I called this morning

unanimously agreed we are by all manner of means to shun fighting with them, especially if they have the wind of us ; and retire, if we cannot avoid it otherwise, even to the Gunfleet, the only place we can with any manner of probability make our account good with them in the condition we are in. We have now had a pretty good view of their fleet, which consists of near, if not quite, eighty men-of-war fit to lie in a line and thirty fire-ships ; a strength that puts me beside hopes of success, if we should fight, and really may not only endanger the losing of the fleet, but at least the quiet of our country too ; for if we are beaten they, being absolute masters of the sea, will be at great liberty of doing many things they dare not attempt while we observe them and are in a possibility of joining Vice-Admiral Killigrew and our ships to the westward. If I find a possibility, I will get by them to the westward to join those ships ; if not, I mean to follow the result of the council of war."

The strategy here indicated is plain, and, in my judgment, sound. It may be profitably compared with that of Nelson as explained to his captains during his return from the West Indies whither he had pursued Villeneuve. Villeneuve was on his way back to European waters and Nelson hoped to overtake him. He had eleven ships of the line in his fleet and Villeneuve was known to have not less

to reduce his power of sporadic warfare to within these narrow and comparatively ineffective lines, as it has done whenever it has been used. Capture of bases is thus one of the most important measures in defence of trade in open waters ; and this cardinal principle has always been well known in this country. Of the expeditions sent by the younger Pitt to the West Indies in the early stages of the Revolutionary War, the later expeditions sent thither after 1807, and the captures of the Cape, Mauritius, Bourbon, Banda Neira, and Java, some had as their principal and sole object the defence of trade, and all included it as one of their objects. The intended capture of the Cape in 1781 was, for instance, directly related to the fact that it was the source of supplies without which Mauritius, the French base, could not maintain a powerful squadron in the Indian Ocean. It was the heavy losses of trade in the Indian Ocean that forced these measures upon us,¹ and in this way the army co-operated with the navy in defending trade. Sea

¹ The squadron and privateers at Mauritius were taking grievous toll of the Calcutta trade. Within six weeks during 1808 no fewer than twenty prizes, valued at a third of a million sterling, were taken into Port Louis. With the capture of the island the back of this warfare was broken, and the losses became negligible in those parts.

warfare, as I have said earlier, demands the use of all arms in combination.

In the late war the enemy possessed few oversea bases, and such as he had were taken or blocked early in the war. In home waters, Ostend and Zeebrugge were evacuated by the British forces in 1914, undamaged and available as bases for the enemy ; thence, therefore, were those torpedo craft, surface and submarine, able to operate which took not only so heavy a toll of British trade in the Channel but caused so great a deflection of naval flotilla² strength to furnish defence in the vital area of the approaches to London. Whatever may have been the reasons which led to this presenting the enemy with flotilla bases in a most important position, the fact that it was done argues a failure to appreciate the relation of bases to sea warfare and the influence of attack in a vital focal point. The whole question brings again into prominence that interdependence of the services in war and, therefore, that need for co-operation in counsel to which I have referred more than once.

Though some bases may be vulnerable for various reasons, all will not be : and vessels can in any case make extended cruises from impregnable bases in home waters. It never has been, nor ever will be, possible to prevent single ships or small

squadrons from getting into blue water. Such vessels, if trade be their objective, will choose those areas for their operations where the prospects of doing injury are greatest—that is, the points of convergence of trade. Any map of steamship routes will show roughly where these are. The second method of trade defence, therefore, is to send ships to those most likely areas to cruise. This method was extensively used in past wars, particularly in areas which were terminals of long ocean voyages, or when commerce particularly required constant sailings of single vessels, to escort each of which would have required a force beyond that available. Its advantages and disadvantages need not here be discussed. It is enough to say that while it furnishes a measure of security, it is not by itself an adequate protection: further, it requires the services of a large number of ‘cruisers’—that is, vessels suitable for cruising.

The third method is to place armed vessels actually alongside the vessels to be guarded. This, while it calls also for the employment of large numbers, is the most effective: it is consistent with the principle of concentration of force at the points where it is needed. If the enemy attack the convoy he cannot escape being counter-attacked. It affords, in fact, the best opportunities for destroying the

fighting forces of the enemy, provided officers interpret their duties in the true spirit of offence. Mahan, writing over thirty years ago, and with the experience of sailing-ship warfare alone to guide him, remarked that 'the results of the convoy system, when properly systematised and applied, will have more success as a defensive measure than hunting down individual marauders—a process which, even when most thoroughly planned, still resembles looking for a needle in a haystack.' His opinion was amply corroborated by the experiences of the late war. Instruments alter, principles remain: a fact which those who so loosely talk of the new weapons—the submarine, the aircraft, and the mine—having 'revolutionised' warfare would be wise to bear in mind.

It will be obvious that if effective defence against this form of attack is to be made, two things are essential—ships scattered about the oceans in stations or as escorts, and cover for their operations. The first requires large numbers acting separately, the second a strong concentrated force. Two fallacies connected with these points have been widespread recently. One is that the number of 'cruisers' a navy requires depends upon, and is therefore calculable from, the battleship strength. Nothing, as the needs and methods of trade pro-

tection show, is less true. The whole experience of trade protection is there as evidence in disproof. It is made upon the totally false premise that what are called 'fleet duties' constitute the sole duties of cruisers. If they did, should we have found Nelson, shortly before Trafalgar, asking for an additional eleven frigates with his fleet, when he already had twenty-six cruising vessels under his command? Since nearly all were absorbed in the essential duties of the defence of trade on the Portuguese coast, they were not available for the duties with the fleet.

The other fallacy is that it is well known that it is 'cruisers' which defend trade, and that 'battle-ships' play no part in its defence and are not needed. This leaves out of consideration the elementary military principle that any detached force needs cover. It deals with one half of the problem only, that part relating to direct defence, and omits the simple fact that those cruisers themselves require defence if there be a concentrated force consisting of ships either of superior individual strength or in greater numbers free to get to sea and destroy them in detail.¹

¹ These fallacies are comparable with one enunciated by a statesman some years ago that Nelson preferred to fight with inferior numbers—Nelson, whose whole tactical principles are summed up in concentrating at least two ships upon one of the enemy's!

In the late war, Germany, when her assault upon France had been arrested, was in turn assaulted and invested. She attempted a counter-investment without cover, by means of submarines. It failed : and it did so because it was not possible for the enemy to give cover to his submarines and thus prevent the free action of the small craft which defeated them—the destroyers, trawlers, sloops and drifters and aircraft which escorted and protected the convoys. These individually feeble craft were able to act, scattered in small bodies or singly, off the East Coast of England, in the North Sea, the Channel, and the Mediterranean. Any of them would have been helpless if stronger ships of any class could have got among them. Cruisers did, indeed, do so on two occasions in the North Sea, and also in the Adriatic ; but the escorts were afterwards correspondingly reinforced, first with cruisers, subsequently with capital ships. Thus protected, the convoys continued sailing : but, as Captain Castex points out,¹ if an earthquake had sealed up the Grand Fleet in Scapa Flow or the Forth, the uncovered High Seas Fleet would have brought the traffic to a standstill within a few weeks, or even days.

It is said that trade will be attacked by aircraft

¹ *Synthèse de la guerre sous-marine.*

in the future. Why it should be assumed that the nations of the world, having agreed that submarines shall not attack sea-borne trade except in conformity with the doctrine of visit and search, will stultify themselves by extending to aircraft what they deny to submarines I do not know. It is directly contrary to the greatest interests of the world that they should do so. But if such attack were made, defence against it presents no insoluble problem. Escort will afford defence, the necessary addition of the proper craft—aircraft—to the escorts being the obvious answer. Moreover, any nation that so acts will do so with its eyes open, and will find it difficult to forget that similar conduct on the part of Germany led, as it was bound to lead, to neutrals asserting their unquestioned rights.

To turn from trade attack and defence to the movements of armies across the sea : this operation being of practically the same nature is governed by the same broad principles. A covering force keeps the main body in check : an escort accompanies the transports. Thus, with enemy fleets or squadrons in Brest, Rochefort, Cadiz, and Barcelona, and the possibility of individual enemy ships being at sea, an expedition to Sicily is protected by covering squadrons off those ports, with a small escort to guard it against such force as it was reason-

able to expect might be met at sea. The army going to France was covered by the Grand Fleet, with a second line of older ships in the Channel ; and escorted by small surface craft—torpedo-boats and yachts, with airships for look-outs. Armies going to the Dardanelles or Salonika were covered by the Allied squadron of capital ships at Taranto, and escorted by small craft. In the Russo-Japanese War, the army going to Korea was covered by the main Japanese fleet in the neighbourhood of the Russian fleet, the line of passage being occupied by detached cruisers in selected stations—the alternative of cruising instead of escort. A common principle informs all these dispositions.

When defence against an oversea expedition is to be made the problem has only to be reversed. Our old sea commanders from long experience knew that the enemy, to invade, must be able both to cover and escort, and their confidence in security was based on their knowledge that he could not provide both. He might indeed attempt to obtain what would amount to cover by the stratagem of a feint with his main body : but there still remained the business of giving direct protection against the flotilla, numerous small and well-armed vessels, fully effective against the transports ; and that invariably proved impracticable. Most ingenious

were many of the schemes for obtaining temporary local command by means of diversions and feints ; but, except in the one case of the expedition to Minorca, they were unsuccessful : and that too would have been defeated if it had not been forgotten that an army cannot cross the water unless it has sufficient tonnage to carry it. So simple are these principles that it should seem unnecessary to state them ; yet, like others referred to in my former lecture, they are forgotten in practice, as acres of barbed wire, pill-boxes, and camps on the East Coast of England between 1914 and 1918 testified. Whether we are considering the defence against military attack upon this Kingdom or any of the Dominions or Colonies, the principle expressed in an Admiralty memorandum 170 years ago holds good to-day, in spite of the complete changes in material. 'The defence for our Colonies as well as our coasts is to have such a squadron always to the westward as may in all probability either keep the French in port or give them battle with advantage if they come out.' There is the principle of cover and the function of the capital ship, expressed in a nutshell. The National Debt would be smaller to-day, if principles, established by long experience and supported by plain logic, had governed action. And principles were never

more in need than at the present moment, when warfare has extended into the air. The air definitely modifies the question of defence of territory from oversea military attack, but does not alter the principles. It affords a new and most valuable addition to the defending flotilla—that force whose particular function it is to deal with the enemy transports if they should succeed in slipping through behind the covering forces. That flotilla in the old wars consisted of frigates, sloops, brigs, and gun-vessels; in the late war, of small cruisers, destroyers, and submarines. In each case these were capable of being assembled rapidly, and thrown upon a fleet of transports long before it could have disembarked. To this flotilla of surface and submarine torpedo craft we now have added the supermarine torpedo craft, which renders it necessary for an invader to increase the support of his invading force by craft capable of defeating the defending naval forces in the air as well as those on the surface: and that is a very difficult thing to do, unless his craft can operate from a land base.

The question naturally arises whether, in view of the assumption that the aircraft can reach the transports and the troops on landing, and cannot be prevented from attacking them by any assemblage of surface craft—an assumption which has a very

reasonable foundation—there is now any need to furnish surface ship protection at all, or at least that part of it represented in ‘capital ships’—the cover ; and whether the whole defence may not be entrusted to the air element of the flotilla. If such should be the case, could not defence be provided more economically by an increase in the aircraft and reduction of the surface craft, since several aircraft can be provided for the cost of a single surface vessel ?

Let me proceed upon the assumption that the force for defence against invasion would actually be cheaper—though I must point out that this in practice would require calculation and is not capable of off-hand assumption. The problem before the defender is to prevent an efficient and sufficient enemy force from being assembled on his shores. There are two conditions to be fulfilled by the defending force. First, it must reach the enemy army before it has disembarked or at least completed its disembarkation : and having reached it, be able to inflict such loss as will disable it. That is what the fleet or flotilla has been able to assure hitherto, and that is what the new arm of the fleet or flotilla is required to do. If it can, then, for the purposes of invasion, the vessel that flies may take over the duty of defence from the vessel that swims.

The best defence consists in destroying the

expedition before it starts, at its port of assembly. That has been longed for on many occasions—it was done by Drake, considered on many occasions against ports in Spain and France, attempted between 1801 and 1803 but without success. The air portion of the flotilla may be able to do this. Whether it can or cannot depends, as usual, first on whether the port can be reached by the flotilla, and whether, when it gets there, its instruments are effective. If the port is beyond flying range the flotilla must be carried, in which case command of the intervening water, which cannot be obtained without surface ship strength, is necessary. But it is possible that the air flotilla may be capable of reaching the embarkation port itself; whether when it arrives it can demolish the preparations is a matter on which I express no opinion, as it becomes a question between the aircraft and the local means of defence, which is beyond the scope of my subject.

If the enemy cannot be destroyed at this point of departure he must be intercepted elsewhere: and the obvious spot is the old one of his point of arrival. This demands that an air flotilla must be capable of being assembled when wanted and in time to deal with the transport fleet in the neighbourhood of its disembarkation. Provided the numbers exist there seems no reason why this

should not be done : but what the numbers required would be I do not pretend to know—nor does anyone else. It is mere common sense, however, to anticipate that the invader will furnish a defending air flotilla, either in advance or in escort, precisely as he has had to furnish direct defence on the water, whose duty it will be to destroy the opposing air flotilla. And it is proper to assume that the attempt would not be made unless the enemy considered he had reasonable prospects of success—that is, that he could disable the opposing air flotilla. In which case, one may ask whether it is wholly wise to abandon other lines of defence. We did not trust to one line in the past. Pellew described the old system of defence against invasion as one of a triple bulwark¹—the offshore squadrons, the inshore squadron, and the flotilla. It may be that the flotilla is now so powerful and so dependable an instrument, or, if increased, can be made so powerful and dependable, as to render unnecessary the alternative lines : and we may be content to

¹ 'I see a triple naval Bulwark composed of one fleet acting on the enemy's coast, of another consisting of heavier ships stationed in the Downs ready to act at a moment's notice, and a third close to the beach capable of destroying any part of the enemy's flotilla that should escape the vigilance of the other two branches of our defence.'

entrust the command of the sea in the vital locality to that part of the flotilla which flies. But I would point out that this is a highly unprofessional way of arriving at a decision, however pretty it may look on paper. It assumes a single operation—a straightforward attempt to push across an intervening water. Such things are not done in war—except by ignorant people. Diversions are introduced, feints are made, superiority at the decisive point is worked for. An undertaking of such importance is not undertaken by crude force. It is not impossible that so large a flotilla may be maintained as to provide for everything : but whether this would be an economical use of either money or force is questionable.

Let it, however, be assumed that the air flotilla can give all the security needed. Can we then dispense with the surface ship, particularly that bugbear of some people, the ' capital ship ' ? Yes—if defence against military invasion is the sole object of sea warfare.

But it is not. Trade has still to be defended, troops have to be moved and, possibly, operations of investment to be conducted. To defend trade, cruising vessels are needed in the approaches and on the outer trade routes, far beyond the range of the aircraft, even if such craft were armed with adequate weapons, which at present they are not. Cruisers need cover, and the covering force must be

strong enough to meet whatever opposition there may be. Though, therefore, it might be possible to rely wholly upon the air flotilla for defence against invasion by troops, the surface vessels have in any case to be provided for these other services. The position taken up by the covering force is the same for all duties—defence of trade of the Kingdom, of the Dominions; and, therefore, although military invasion may possibly be guarded against by the air flotilla alone, this does not do away with the need for the surface squadrons and flotilla. Reductions in the force of capital ships are not rendered possible by the air flotilla's power to guard against this particular danger. They have to be there in any case. It is within the bounds of possibility that a reduction might prove possible in the surface flotilla, some of its units being replaced by aircraft; but the strength of the flotilla is not measured on a basis for defence against invasion: it depends upon many other needs. For these reasons, although flying craft of the present types are unquestionably most valuable units in that particular operation of defence, the fact that the other vital duties at sea still remain to be performed, and can be performed only by vessels of the swimming type, means that great increases in the air flotilla cannot be made at the

expense of the surface fleet or flotilla. Very false deductions are liable to be made if the operations of war are considered separately as though each were a separate drama. All the events by land and sea are interconnected and must be considered together.

The application of the principle of the co-operation of arms is essential to the proper preparation for and conduct of sea warfare. The particular types of ships—surface, submarine, and supermarine—must not be considered separately, but in association with each other. All ships have their limitations : none can perform every function. And just as we cannot dissociate the arms, neither can we dissociate operations. We run some risk, in my opinion, when a new danger arises, of forgetting that the old ones do not necessarily disappear ; and, in providing against this new danger, to diminish forces without which we cannot guard ourselves against the old. It is constantly being impressed upon us that a fatal blow at what is figuratively called ' the heart ' may be delivered from the air ; and that to guard against it we must increase those forces which alone can give protection—air forces—obtaining the means to do so by reducing naval force. But let it not be forgotten that, though this new danger has come into being, the danger to which we nearly succumbed

during the war—investment by sea—will be as fatal ten or twenty years hence as it was ten years since, probably, indeed, more so. If an enemy have command of the approaches, or of the outer routes of trade, this country will succumb as surely, and with more suffering, than it would from its heart being struck. The stomach is no less important an organ of the body than the heart, and while it is clearly essential that the heart be protected, it is no less essential to guard the stomach. The forces capable of giving defence to that organ are still of the type that navigates on or in the water, for the simple reason that in the present state of knowledge such vessels only are capable of operating in those areas and in that manner in which alone protection can be given. Numerous ships of comparative weakness must be scattered in escorts or as cruisers. These must be covered by concentrated force in the form of either size or numbers; and that concentration will be composed of ships which, whatever may be their size, are, as they ever have been, the 'capital ships.' Experience and logic inexorably lead to this conclusion. Whatever be the size of the ships potential enemies build, their opponents must possess weapons which can disable them: and, so far as all the evidence we possess goes to show, the only effective

weapons are ships mounting artillery which can deliver at least as great a volume of fire as their opponents. Whether the strength be massed in one hull or divided among several is a question of tactical and technical judgment which need not concern us here.

It is, moreover, not wholly impertinent to the question to point out that there are many nations who, owing to their distance, are not liable to attack this country by direct bombardment from the air, yet who are not unable to strike unpleasant blows at us if we cannot defend ourselves at sea. The system of defence of the interests of this Empire cannot be based upon considerations of one form of attack alone, which can be delivered only by a minority of possible enemies.

I have now made a very superficial examination of some of the principal elements in sea warfare. Its ultimate object has been shown to be to stop the vessels which carry trade or troops, and ensure its own trade or troops being safely carried. It attains its object by disabling the fighting forces which protect or oppose the passage of those vessels. Thus we have two stages which, however much the second may be included in the first, are fundamentally distinct; and need examination separately in considering the requirements of the vessel which shall be capable of fulfilling the needs of sea warfare.

Disablement of the fighting forces may be attained, as we have seen, by more ways than one. Some require co-operation of all arms of the national equipment, naval, military, and air, as when an enemy can be disabled only by attack in his harbours ; some of the arms that fight at sea only, swimming, diving, or flying, as when an enemy elects to fight at sea. These arms must in combination possess the power of disabling the enemy. If they are weaker, in whatever terms you may measure weakness, they cannot do so.

I will not stop to discuss at length what constitutes weakness beyond remarking that a battleship alone in narrow deep waters is weak *vis-à-vis* a submarine ; a submarine is weak *vis-à-vis* a destroyer ; a destroyer by day is weak *vis-à-vis* a battleship in a heavy sea. So, too, a battle-cruiser squadron may suffer damage at the hands of the aircraft of a carrier ; but an aircraft carrier is at the mercy of a light cruiser, and a light cruiser has no chance against a battle-cruiser. Similar analogies of dependence of various arms upon each other exist in military establishments. 'Weakness' is thus a qualified term, and depends upon conditions and combinations.

The most complete sea-fighting force is that which combines all, the heavy ship for strength

against heavy surface ships, and the remainder, each for its own purpose, in association with the heavy ship. Many of the misconceptions concerning the values of the various classes of ships arise from a failure to consider them in association, and the relation each bears to the other. To say that a large ship is useless or helpless because she requires a destroyer escort is analogous to saying that field artillery is useless because it cannot act alone without infantry, or bombing planes useless because they need the defence of fighters. The greatest individual strength can be obtained in a ship which fights on the surface : and to the strongest class of ships the name of 'capital ships' is given. The term is an old one ; it has been used variously to mean either any heavy ship, a three-decker, or a flagship. Within recent times it has become associated with the heaviest ship that it is possible—or permissible, which amounts to the same thing—to build. Whether a fleet should be composed of a few very heavy ships, as some think, or of a greater number of smaller ones with a corresponding armament, as others believe, is a question too technical for discussion, nor is it material to the problem at this stage : which problem is, *is there any criterion, and if so what, by which to determine the size that this essential element in sea warfare, the so-called 'capital*

ship,' must be? Is it, for example, possible arbitrarily to say that she must be (assuming such a ship might or could be built) one of 100,000 tons or one of 1,000 tons?

It seems possible that some conclusion may be indicated if the question of the size of a man-of-war is referred to function—that is to say, considering what end she has to attain, and seeing what size is necessary to enable her to attain that end.

The first function, as I have repeated many times, is to disable the fighting ships of the enemy. In the past the needs of this primary function have been furnished by constructing a ship of approximately the greatest size of which the shipbuilding skill of the day was capable and carrying the heaviest guns that could be worked on shipboard. I say 'approximately' advisedly, for British capital ships ranged through many rates and were often of a lesser size and carried lighter armaments than those of the enemy, though the ships were more numerous. The *Victory* of the mid-eighteenth century displaced a little over 2,000 tons. Knowledge of ship construction increased and the last three-decker (*Duke of Wellington*) displaced nearly 6,000 tons. When iron or steel took the place of wood in construction it became possible to build larger. The ship, therefore, grew still more. The 'iron-

clad' that followed her—the *Warrior*—reached 8,800 tons. Thence onward an almost continuous rise in tonnage took place (*Devastation* 9,300, *Collingwood* 9,500, *Nile* 12,000, *Royal Sovereign* 14,150, *King Edward VII* 16,350, *Lord Nelson* 17,500, *Dreadnought* 17,900, *Hercules* 20,000). And with this rise of tonnage ran an almost continuous rise in the calibre of the primary armament. I will not weary you with technicalities before 1889, but will remind you only that the 'battleships' of the Naval Defence Act of that year carried 12-inch guns, which remained the standard size for about twenty years, after which increases to 13½-inch, 15-inch, and 16-inch took place.

Wherein lay the reasons for these increases in tonnage and armament? Had the character of sea warfare altered? Or had the vessels of the earlier times proved too small, or too weak, or too little protected to fulfil their first and immediate function—that of disabling the enemy? Or had the functions of the capital ship undergone some change, so that these successively greater tonnages and armaments formed indispensable characteristics of the 'capital ship'?

Disabling of the enemy being the object in sea warfare, we cannot avoid asking whether disablement is practicable only if ships are armed

with a particular weapon. Cannot, in fact, one ship or squadron fight another unless both have 16-inch, 15-inch, 14-inch, or some such heavy pieces? Clearly, there is nothing in function to confirm such a view, otherwise fleets and squadrons of which the ships are armed with 32 or 42 or 64 pounders of the three-deckers, or 9-inch or 12-inch guns of later dates, would have been unable to perform what was required of them in their day: which as a matter of pure fact we know they could do. But when mechanical and metallurgical science enabled larger weapons to be made, and as their possession conferred additional strength, so, if one navy increased its calibres and consequently the tonnage which became necessary to carry the guns, others could not do otherwise than follow suit; not to do so would have been to possess inferior and therefore useless weapons. So increases, the result of competition, itself the result of the invention of heavier artillery and shipbuilding skill, followed. Pepys even remarks upon it in his day. 'Let it be considered whether the world's falling to the enlarging the burthen of their ships *from the small size that they anciently were limited to*, did not spring almost at once through all the European parts of any note for their navigation, that is to say, within one century or less, namely, *upon the invention of*

great guns and the employment of them in sea service ; and together with the increase of their burthen, the increase also of the strength in their fabric, as well for bearing the weight of their own guns as withstanding the shot of their adversaries.'¹ It is the same story as to-day of guns and armour. Yet in the long run no nations were relatively one whit more powerful than they had been before they did so, except, possibly, those who initiated the increase, and then only temporarily. Each new programme of construction embodied, therefore, an improvement in type—in other words, an increase in size. Competition drove all the navies up the steep rise : none, and this nation in particular, felt it could afford to risk getting behind in the race.²

Omitting all questions of policy *vis-à-vis* other nations, and concentrating attention solely on the strategical and tactical qualities necessary to enable the principal ship of war to perform her functions, what are those qualities ? They are : that she

¹ *Samuel Pepys's Naval Minutes*, N.R.S., vol. lx, p. 425.

² I will not stop to enquire whether, as a result, this nation increased its power at sea, beyond remarking that whereas in 1906 we possessed a two-power standard and a superiority in ships fit to 'lie in the line' of twenty-three ships over Germany, in 1914 we no longer had a two-power standard, and our superiority of such ships was eight.

must be able to reach the place where her opponent is to be found ; to maintain herself in that position long enough for the services required ; and to fight whatever enemy forces oppose her, fighting being considered not as separate individual duels but as combats between combinations of ships, ' ships ' being all vessels capable of fighting at sea—surface, submarine, and supermarine. So far as fighting is concerned, the size necessary to fight is roughly determined by the size of the enemy. Success is measured by the degree of completeness of the enemy's disablement ; complete disablement, material and moral, resulting from decisive action and destruction of the enemy's material or *moral*, or both. Given that fleets are composed of ships of approximately the same size, what that size is does not affect the decisive character. No more decisive an action can be fought between fleets composed of ships of 100,000 tons than that which was fought off Aboukir with ships of some 2,000 and less, or that in the Straits of Tsushima, where the most powerful ship was of some 15,000 tons, or that off Salamis in 130-foot galleys. If one should imagine that, in desperate battle, the British and German fleets had destroyed all of each others' capital ships, and nothing behind them existed above the various cruiser classes, would sea warfare have come to an

end because there were no great, or 'capital' ships left? Certainly not. The next sized ships would have become the 'capital' ships—those armed with 9.2-inch, 7.5-inch, and 6-inch guns; and these would have performed the functions previously performed by the larger classes. If we imagine a still further holocaust, and nothing larger than, say, the 4,000-ton light cruiser class remaining, the same thing would have happened. These ships were capable of reaching the positions needed, maintaining themselves there, and fighting the enemy—since the assumption is that their force is similarly reduced—acting in fact as covering forces if cover were—as it would be—required.

The question which naturally suggests itself is, where can this theoretical reduction of size stop? The downward limitation is reached when the vessels cannot keep the sea sufficiently to perform the work required of them.

Thus, size, in respect of this first and immediate function of fighting the enemy, is mainly a relative matter. It is positive only in regard to sea-keeping, the limitations of which in the smaller classes of ship render them unable to perform the functions which the operations of war require.

Passing from the immediate function of overcoming the armed force to the ultimate function of

controlling the sea, a size limit is indicated by that function. To exercise control, the force of the vessels exercising it must be greater than that of those users of the sea—the trading and transporting vessels—which it is necessary to master, even though temporary armaments should be fitted, and vessels in greater numbers should have to be dealt with. Merchant vessels can and may be armed, as we have seen in all wars, from Pompey's expedition against the Mediterranean pirates in 66 B.C. to 1914. The ships whose business it is to control the movements of shipping need to be more powerful than they, precisely as the police force must be more powerful than the law-breaker. Although a man-of-war might possess all the qualifications for the operations against the enemy fighting forces on a 'small' tonnage, such a tonnage might not—I do not say it would not—be enough to compel compliance upon a merchant ship, armed as a merchant ship can be armed. Victory without its fruits is sterile, and the fruit of victory is the power to control. Thus, if the instrument, though capable of tactical victory over the armed force, is not strong enough to *exercise* control, it is useless. What tonnage is required for this purpose is calculable from a consideration of what armaments can be installed in mercantile vessels.

This, however, does not exhaust the subject, since to-day there are conditions which did not exist 200, 100, or even 20 years ago. Two new types of vessel capable of disputing the command of the sea have come into existence—the submarine and the supermarine. It is for consideration whether, and if so in what direction, these vessels influence the size of the surface man-of-war.

So far as the submarine is concerned, in what manner does she, as we know her and as far as we can anticipate her development, influence the size required for the surface ship? Does her entry into the list of combatant types necessitate either an increase or a decrease of size?

Notwithstanding the advent of these two new types of 'weapon carriers' (for that is what a ship in reality is) at sea, the surface ship remains at present the decisive factor. No other type combines the powers of offence and mobility to the same degree as she. The aircraft has not sufficient endurance and range, and even though she should in the future prove an influential instrument in narrow waters against surface ships by day, though whether a dominating one it is as yet too early to predict, she cannot *exercise control* without using her force in such a way as to injure neutrals and produce, precisely as the submarine produced, their interven-

tion. She cannot exercise visit and search : when she can it will be a different matter. The submarine can be given both sea endurance and range, but—provided one portion of the agreements¹ are adhered to—she is not effective as a weapon for exercising control : also, as experience (which is our best guide) has shown, her capacity to do harm can be kept within bounds by the surface craft when used in a proper manner. Command at sea rests for the present, and as far ahead as we can see, with the surface ship.

The principles of concentration and cover call for massing of strength. The vessels of which such necessary concentration is composed have always been those of the largest types, for which the name 'capital ship' has of late years been revived. This force of concentrated power in capital ships is the foundation of naval strength, and those capital ships are, at the present day, large surface ships. What the future may hold for us we cannot tell : only very rash people would dogmatise on the subject as to whether the surface ship will at some time hence be replaced as 'capital ship' by the submarine or the aircraft. There is, however, no question that the submarine challenges the command of the sea.

¹ There are ambiguities in the Root agreements. Articles 1 and 4 (par. 2), for instance, are not reconcilable.

She has the power to approach unseen, and she carries a weapon which, if it strikes, will temporarily disable or may even sink the surface ship. The inaccurate nature of her weapon obliges her to make her attack at comparatively close quarters, its size prohibits her carrying a large stock of 'ammunition.' Are these disabling or destroying results best counteracted by an increase or a decrease in size?

Subjecting the question to the practical experience in war, we cannot fail to notice that the surface vessels which feared the submarine least were those of the smallest classes—the destroyer, the torpedo-boat, the motor-boat, trawler, or sloop. These light craft were kept constantly at sea: their occupation was in the waters where submarines were most numerous. Far from needing satellites to defend them against submarines, they were the principal effective offensive instruments against them. Their speed, light draft, and handiness gave them a capacity to avoid, or largely to render ineffective, the enemy's weapons, while it conferred upon themselves the power effectively to attack the submarine with weapons of great destructive power—explosive charges. In the neighbourhood of the very great ships the submarine was the hunter. In the neighbourhood of the destroyer she was the hunted.

The light cruiser was less immune than the

larger ship. Yet she, too, operated constantly in waters occupied by submarines, in the North Sea and the Mediterranean. Some few were sunk.¹ Others were hit but regained harbour. But very many were not hit at all.

The larger the vessel, the greater were the precautions taken to guard her, for she could not guard herself, nor counter-attack with certainty.² She it was, in fact, whose mobility was most impaired by the submarine. This is not to say that she was deterred from going where she was required. But she went at high speeds, zigzagging, using much fuel, and thus restricting her power of keeping at sea, and accompanied by other craft as escorts—craft badly needed for the defence of trade. Her action was circumscribed, while that of the lesser vessels was far less affected.

Thus, security was largely a question of size. The smaller the ship the less easy was she to hit. Security, or a measure of security, can, however, also be conferred by other means. As in medicine the effects of malarial fevers may be counteracted

¹ Thus the *Nottingham* sank only after being hit by three torpedoes, and the *Falmouth* after four.

² A submarine was sunk by a battleship ramming her—the *Dreadnought*; another by a cruiser (*Birmingham*). But these solitary instances cannot be taken as evidence of certain powers of counter-attack.

either by prophylaxis or cure, so in the case of ships the effects of torpedo fire may be counteracted either by making hitting difficult or by resisting, or limiting the injury done by, the blow, by means of armour or other forms of defence. The former method requires diminution in size ; the latter requires increase. Whether, consistently with retaining the sea-keeping capacity without which a man-of-war cannot conduct the operations for which a navy exists, size can be reduced to such an extent as effectively to reduce the chances of being hit ; and whether, consistently with the requirements of docking, and other factors, the size can be sufficiently increased effectively to reduce the effect of injury from torpedoes, are questions upon which the decision depends. The degree to which protection can be afforded by each measure needs comparison : and the resulting effect of each measure upon the capacity of a navy to perform its function has then to be considered.

To turn from the influences of the submarine to those of aircraft, the same arguments apply ; for the weapons are of the same order. The danger of destruction or disablement by a torpedo, launched through the water or dropped from the air by a supermarine vessel, can be reduced either by lessening the chances of being hit or increasing the powers

of resistance if hit. Increasing the powers of resistance calls for additional weight in the form of armour or some forms of underwater construction—that is, a larger ship. As in the case, therefore, of the submarine, it is for consideration whether the advent of the aircraft is best provided for by the means of prophylaxis or cure. The conclusions arrived at need then to be co-ordinated with those reached concerning the size necessary for the surface ship, to which the earlier arguments referred.

The nation the circumstances of whose existence make the maintenance of superiority at sea essential, and therefore an element in its national policy (as sea power long has been for this country of ours), must, as Britain has done, provide herself with superior numbers of the ships which conditions admit. In the past the limitations of the material—wood—prevented any nation from building ships of more than two or three thousand tons. Those ships were effective instruments, as our history demonstrates. To-day, the limitations of material have gone, and we could without difficulty build ships of twenty times that size: but a new form of limitation has come into existence, which is not one of material but of international agreement. By agreement the size has been restricted. The functions, however, of the ship, whether of 1,000

or 100,000 tons, are the same. The size, from a purely military aspect, is, as the preceding remarks indicate, immaterial, with the qualifications referred to. The ship must be able to reach the area where her services are needed and operate in the manner the performance of those services demands.

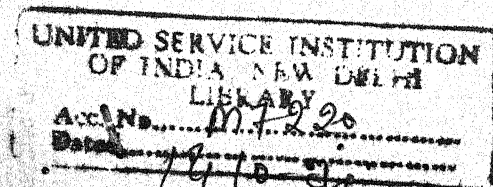
If I have reiterated the word 'Principle' it is because I see in the columns of correspondence either an ignorance or a disregard of the principles of sea warfare that I conceive to be highly dangerous to the State. For I firmly believe that without principles in warfare, no less than without vision, the people perish. All the study I have made of sea warfare goes to confirm the words of the old Trimmer, Lord Halifax, which I recall as being as applicable to the Britain of to-day as they were to the smaller nation of 1694 :

The importance of our being strong at sea was ever very great, so in our present circumstances it is known to be much greater: because, as formerly our force of shipping contributed greatly to our trade and safety, so now it is become indispensably necessary to our very being. It may be said now to England, 'Martha, Martha, thou art busy about many things; but one thing is necessary.' To the question, 'What shall we do to be saved in this world?' there is no other answer than this—Look to your Moate. The first article of an Englishman's creed must be that he believeth in the sea.

Believing in the sea is one thing. Having reasoned grounds for that belief is another, and those who would introduce a new creed must possess such grounds. They reside in the principles of war, and those principles are to be discovered in history of war, which, as I believe, those whose business it is to direct policy, or whose ambition it is to influence opinion, should study as a preliminary to the formation of an opinion. Knowledge does not come intuitively in the science of war, nor does capacity in the art. The source of knowledge is experience, either that of one's self or of others. Profiting by the use of such experience as is obtainable, one may begin to consider the use and influence of, and the reactions and readjustments resulting from, the introduction of new weapons ; and thereby avoid the lament expressed in Petrarch's lines :

By sad experience taught I learnt at last
Wisdom's best rule, to profit from the past,

so that if war be the *ultima ratio* and no other manner of solving differences be practicable, we may be in a position to make the most efficient, which is another way of saying the most economical, use of the national weapons with which in consequence we are obliged to continue to furnish ourselves. /



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transports. In other words he is putting the cart before the horse, a procedure which has never yet succeeded in getting the cart to its destination. This second alternative is then merely a clumsy and extremely inefficient way of attaining the same end as the first, and need only be mentioned in order to exclude it from further consideration.

There remains only a third alternative. This is to assemble the invading military force at suitable ports as before, and to attempt to engage the attention of the defending naval force by operations at a distance for a time sufficient to secure the unmolested transit of the military expedition. This is the method which has nearly always been employed by an enemy projecting an invasion of this country. It has never yet succeeded, because it always leads in the end to a situation which is practically indistinguishable from that involved in the second alternative, which I have already discussed and excluded. The naval and the military elements in the enterprise of invasion being now, by the hypothesis, separated in space and for that reason incapable of being very exactly combined in time, a whole series of highly indeterminate factors is thereby introduced into the problem to be solved by the invader. There are elements of naval force, to wit, all manner of small craft, which are not required for the main conflict of fleets—and it

is this conflict which alone can secure the command of the sea—but which are eminently adapted for the impeachment and destruction of unarmed transports. These will be employed in the blockade of the ports in which the military forces are collecting. If the assailant employs similar craft to drive the blockaders away, the defender will bring up larger craft to stiffen his blockading flotillas. The invading force will therefore still be impeded and impeached. The process thus goes on until, if it is not otherwise decided by the conflict of the main fleets at a distance, the contending naval forces of both sides are attracted to the scene of the proposed embarkation, there to fight it out in the conditions involved in the second alternative considered above, conditions which I have already shown to be the least favourable to the would-be invader. In a masterly analysis Mr Julian Corbett has shown that the British defence against a threatened invasion has always been conducted on these lines, that the primary objective of the defence has been the troops and their transports, and that the vigorous pursuit of this objective has always resulted in a decision being obtained as between the main fleets of the two belligerents. That the decision has always been in favour of the British arms is at once a lesson and a warning—a lesson that immunity from invasion can only be ensured by superiority at sea, a warning

that such superiority can only be secured by the adequate preparation, the judicious disposition, and the skilful handling of the naval forces to be employed, as well as by an unflinching *animus pugnandi*. But no nation which goes to war can hope for more or be content with less than the opportunity of obtaining a decision in these conditions. The issue lies on the knees of the gods.

A few illustrations may here be cited. We have seen how in the Beachy Head campaign Tourville, having failed to force a decision on Torrington's fleet in being, could not turn aside with Torrington at his heels and Killigrew and Shovel on his flank to bring over an invading force from France. He was paralysed by that abiding characteristic of French naval strategy which impelled the French naval commanders to fix their eye on ulterior objects and blinded them to the fact that the best way to attain those objects was to destroy the naval forces of the enemy whenever the opportunity offered of so obtaining a decision. Hence their preference for the leeward position in action, their constant reluctance to fight a decisive action, their habitual direction of their fire at the masts and sails of the enemy rather than at his hulls, and in Tourville's case his failure to annihilate Torrington's fleet in being, resulting in the total miscarriage of the schemes for invasion, to be followed by internal

insurrection, which, as Admiral Colomb has shown, were the kernel of the French plan of campaign. In the case of the Armada in the previous century, the task of invasion was entrusted to Parma, who had collected troops for the purpose, and vessels for their transport, in the ports of the Spanish Netherlands. But Justin of Nassau kept a close watch outside, and Parma could not move. He summoned Medina Sidonia with the Armada to his assistance, but he summoned him in vain, for the Armada, harassed throughout the Channel, and, as it were, smoked out of Calais, was finally shattered at Gravelines. Precisely the same thing happened in the eighteenth century during the Seven Years' War. Troops and transports were being collected in the Morbihan, but their exit was blocked by a British naval force stationed off the ports. Conflans with the French main fleet was at Brest, and there he was blockaded by Hawke. Evading the blockade, Conflans put to sea and straightway went to release the troops and transports, hopelessly blockaded in the Morbihan. But Hawke swooped down on him and destroyed him in Quiberon Bay, Boscawen having previously destroyed at Lagos the fleet which De La Clue was bringing from Toulon to effect a junction with Conflans.

One more illustration may be cited, and I will treat it at some length, because it presents certain

features which give it peculiar significance in relation to current controversies. This is the projected invasion of England by France in 1744. It is, so far as I know, the solitary instance in our naval history which shows the enemy framing his plans on the lines of what is now known as "a bolt from the blue"—that is, he projected a surprise invasion, at a time when the two countries were nominally at peace, in the hope that the first overt act of the war he was contemplating might be the landing of his troops on British soil. In 1743, when this project was conceived, England and France were, as I have said, nominally at peace, but troops belonging to both had fought at Dettingen, not in any direct quarrel of their own, but because England was supporting Maria Theresa and France was supporting her enemies. The fleets of both Powers were jealously watching each other in the Mediterranean, a situation which led early in 1744 to the too notorious action of Mathews off Toulon. Nevertheless, until the very end of 1743 no direct conflict with France was anticipated by the English Government.

Yet France was already secretly preparing her "bolt from the blue." She had resolved to support the Pretender's cause and to prepare an invasion of England in which the Pretender's son was to take part, and on landing in England

to rally his party to the overthrow of the Hanoverian dynasty. The bolt was to be launched from Dunkirk and directed at the Thames, the intention being to land the invading force at Blackwall. Some ten thousand French troops to be employed in the expedition were sent into winter-quarters in and around Dunkirk, but this aroused no suspicion in England, because this region was the natural place for the left flank of the French army to winter in, and Dunkirk contained no transports at the time. Transports were, however, being taken up under false charter-parties at French ports on the Atlantic and in the Channel, and were ordered as soon as ready to rendezvous secretly and separately at Dunkirk. At first the intention was for the expeditionary force to make its attempt without any support from the French fleet. But Marshal Saxe, who was to command it and knew that the Thames and its adjacent waters were never denuded of naval force sufficient to make short work of a fleet of unarmed transports, flatly declined to entertain this project and demanded adequate nava support for the enterprise. Accordingly a powerful fleet, held to be sufficient to contain or defeat any British fleet that was thought likely to be able to challenge it, was fitted out with all secrecy at Brest and placed under the command of De Roquefeuil. Even he was not told its destination,

and false rumours on the subject were allowed to circulate among those who were concerned in its preparation.

So far everything seemed to be going well. The blow was timed for the first week in January, but the usual delays occurred, and for a month or more after the date originally fixed, the expeditionary force and its escort were separated by the whole length of northern France. Yet even before the date originally fixed, England had got wind of the preparations. From the middle of December Brest had been kept under watch, and orders had been issued to the dockyards to prepare for sea as many ships of the line as were available. These preparations were continued, without intermission, until the end of January, the purpose and destination of the armament at Brest still being unknown. Then two alarming pieces of intelligence reached England at the same time. One was that Roquefeuil had put to sea on January 26 (O.S.) with twenty-one sail of the line, and before being lost sight of by the British cruiser told off to watch him, had been seen to be clearly standing to the northward. The other was that Prince Charles, the son of the Pretender, had left Rome and had landed without hindrance in France. This, being a direct violation of the Treaty of Utrecht, was naturally held to give to the sailing of the Brest fleet the complexion of a direct hostile

intent. It was on February 1 that these facts were known, and on February 2, Sir John Norris, a veteran of Barfleur and La Hogue, who was now well over eighty years of age, but as the event showed was still fully equal to the task entrusted to him, was ordered to hoist his flag at Portsmouth and to "take the most effectual measures to prevent the making of any descent on the Kingdoms." Norris hoisted his flag on the 6th, and by the 18th he had eighteen sail of the line under his command. Subsequently his force was increased to twenty. Nothing was known of the movements of the French fleet since January 29, when the frigate set to watch it had finally lost sight of it. It was in fact still off the mouth of the Channel, baffled by adverse winds and gales and vainly seeking to make headway against them. If it had gone to the Mediterranean, Mathews off Toulon would be placed in grave jeopardy, and there were some projects for detaching a powerful squadron of Norris's ships to his support. If, on the other hand, it was aiming at the Channel, Norris with his whole force would be none too strong to encounter and defeat it. This was Norris's dilemma, and it was not until February 9 that he learned from the Duke of Newcastle that an embargo had been laid on all shipping at Dunkirk, where some fifty vessels of one hundred and fifty to two hundred tons had by this time assembled. These

might at a pinch and for a short transit be estimated to be capable of transporting some ten thousand troops. But an embargo, although clear proof of hostile intent, was not necessarily a sign of impending invasion. It was a common expedient, preliminary to war, whereby you deprived your enemy of ships and men very necessary to his purposes and secured ships and men equally necessary to your own. Hence no strategic connexion could with any certainty be held to exist between the embargo at Dunkirk and the sailing of the French fleet from Brest. On the other hand it was clearly dangerous to uncover the Channel so long as the destination of the Brest fleet was unknown, and, although Newcastle had suggested to Norris that he should divide his fleet and send the major part of it to reinforce Mathews in the Mediterranean, yet Norris strongly demurred to the suggestion, and before the time came to act on it the situation had so far developed as to disallow it altogether. On February 11, Norris received information that a French fleet of at least sixteen sail of the line had been seen the day before off the Start. This convinced him that the French had some scheme to the eastward in hand; and as he had frigates watching the Channel between the Isle of Wight and Cape Barfleur he was equally convinced that the French had so far no appreciable armed force to the eastward of him.

Newcastle, however, did not share this conviction. He had received numerous reports of movements of French ships in the Channel to the eastward of the Isle of Wight and other information which pointed to a concentration at Dunkirk. As a matter of fact no French men-of-war were at this time east of the Isle of Wight, and the vessels reported to Newcastle must have been transports making for Dunkirk and magnified into ships of the line by the fog of war. Newcastle, accordingly, ordered Norris to go forthwith to the Downs. Foul winds prevented Norris from sailing at once from St Helen's, and on the 13th, the day before he did sail, he received further information which confirmed his conviction that the French were still to the westward. But Newcastle's orders remained peremptory, and on the 14th he sailed with eighteen ships, and anchored in the Downs on the 17th. There he found two more ships awaiting him, while two others were on their way to join him from Plymouth.

I pause here for a moment to point out that Norris's desire, over-ruled by Newcastle, to remain at Portsmouth was thoroughly well advised. He knew that there was naval force enough in the Thames and the Downs to dispose of any expedition coming from Dunkirk unless it were escorted by the Brest fleet, or by a very considerable detachment

therefrom. He was well assured that no such detachment could have eluded the vigilance of his frigates, and he felt that in these circumstances he could better impeach Roquefeuil by lying in wait for him at Spithead or St Helen's than by preceding him to the Downs. How right he was in this appreciation will be seen from a closer consideration of the movements of the French fleet. It was not until February 13 that Roquefeuil received his final orders off the Start. He was directed to detach De Baraille, his second in command, with five ships. These were to go forthwith to Dunkirk and escort Saxe's expedition, while he himself with the remainder of his fleet was to blockade Norris at Portsmouth and defeat him if he could. But Roquefeuil and his council of war found these orders too hazardous for execution. They resolved not to divide the fleet until at least Norris, presumed to be at Portsmouth, had been disposed of. On the 17th, the day on which Norris had anchored in the Downs, they looked into Spithead and persuaded themselves that they had seen Norris there with eleven sail of the line. Judging that the weather was too bad for a successful blockade, Roquefeuil then passed on up the Channel, convinced that Norris was now behind him with too weak a force to be of any effect. Baraille was then sent on with his detachment to Dunkirk, but by this

time Saxe had lost heart and declined to sail until Roquefeuil's whole fleet was at hand to escort him.

It never was at hand to escort him, and the expedition never sailed. Roquefeuil, with his fleet now greatly reduced, anchored off Dungeness on the 22nd, and never got any further. What had happened in the meanwhile was this. Norris remained in the Downs, being held there for some time by a gale. He was not unaware of what was going on at Dunkirk, but he hesitated to proceed thither lest the French fleet behind him should be covering another expedition coming from some French port in the Channel. He sent to reconnoitre, however, and on the 21st received information that four sixty-gun ships—these were, no doubt, Baraille's detachment—were at anchor off Gravelines, and there covering the transports at Dunkirk. On the 22nd, Roquefeuil appeared off Dungeness and anchored there. As soon as he knew Roquefeuil's whereabouts, Norris resolved to attack him without delay. The wind, being N.W., was favourable to his enterprise, and at the same time made it impossible for the expedition to leave Dunkirk. Should the wind change before Roquefeuil was brought to action and defeated, Norris held that he was strong enough to detach a force to impeach Saxe and Baraille, and at the same time to give a good account of Roquefeuil.

But matters did not exactly turn out in this wise. On the 24th Norris left the Downs, with a light wind from the N.W., and an ebb tide in his favour, making for Dungeness, where Roquefeuil was still lying. His appearance in the offing was Roquefeuil's first information that Norris was to the eastward of him in superior force, and it greatly disconcerted Roquefeuil. He held a hasty council of war and decided to cut and run. By this time the tide had turned and the wind had fallen, so that he could not stir until the tide again began to ebb. Norris, similarly disabled, had anchored some few miles to the eastward, intending to make his attack as soon as wind and tide allowed. But during the night a furious gale from the N.E. sprang up, which drove most of Norris's ships from their anchors, and when daylight came the French were nowhere to be seen. Roquefeuil had slipped his cables, and with the gale behind him was hurrying back to Brest. Norris went after him as far as Beachy Head, but there gave up the chase and returned to the Downs, to make sure that Saxe and Baraille, for whom the wind was now favourable, might find their way barred should they attempt to set sail. The transports, however, were by now in no position to move, nor was either Saxe or Baraille in any mind to allow them to move. They both realized that the game was up. The troops were in the transports, and they

suffered greatly in the gale that frustrated Norris' attack on Roquefeuil. But that was merely an accident of warfare. It was not the gale that shattered the expedition, nor did it save England from invasion. On the contrary, while it played havoc with the transports and troops at Dunkirk, it also saved Roquefeuil's fleet from destruction at Dungeness. But, gale or no gale, the transports and troops never could have crossed so long as Norris held on to the Downs. Nor could they have crossed had Norris been allowed to remain at Portsmouth as he desired ; for in that case Baraille could not have been detached.

To point the moral of this memorable story, I cannot do better than quote Mr Julian Corbett's comment on it. "The whole attempt, it will be seen, with everything in its favour, had exhibited the normal course of degradation. For all the nicely framed plan and perfect deception, the inherent difficulties, when it came to the point of execution, had as usual forced a clumsy concentration of the enemy's battle fleet with his transports, and we on our part were able to forestall it with every advantage in our favour by the simple expedient of a central mass on a revealed and certain line of passage." We were certainly taken at a disadvantage at the outset, for the "bolt from the blue" was preparing some time before any one in

England got wind of it. The country had been largely denuded of troops for foreign enterprises, Scotland was deeply disaffected, the Jacobites were full of hope and intrigue, the Ministry was supine and feeble, the navy was deplorably weak in home waters, and such ships as were available had been dispersed to their ports for refit. Nevertheless with all these conditions in its favour the projected "bolt from the blue" was detected and anticipated—tardily, it is true, and with no great sagacity except on the part of Norris—long before the expedition was ready to start. Surely the moral needs no further pointing.

By these instances, and others which might be quoted, the law seems to be established that in default of an assured command of the sea the fleet which seeks to cover an invasion is drawn by irresistible attraction towards the place of embarkation, and that the same attraction brings it there—if not earlier—into conflict with the superior forces of the enemy. If in the Trafalgar campaign, which I have no space to examine in detail, the law does not seem to operate to the extent that it did in the other cases examined, that is only because the disposition of the British fleets was so masterly that Napoleon never got the opportunity he yearned for of bringing his fleets to the place of embarkation. They were

outmanœuvred beforehand and finally overthrown at Trafalgar.

There is indeed a fourth alternative which has been advanced by some speculative writers, though history lends it no countenance, and it has never, I believe, been taken seriously by any naval authority of repute. I cannot take it seriously myself. It assumes that some naval Power, suitably situated as regards this country, might without either provocation or overt international dispute, clandestinely take up transport—either a comparatively small number of very large merchant vessels or a very large number of barges, lighters, or what not to be towed by steam vessels—might clandestinely put an army with all its necessary *impedimenta* on board the transports so provided and then clandestinely, and without either notice or warning, send them to sea, with or without escort, with intent to effect a landing at some suitable point on the English coast. The whole theory seems to me to involve at least three monstrous improbabilities: first, a piratical intent on the part of a civilized nation; secondly, a concealment of such intent in conditions wellnigh incompatible with the degree of secrecy required; and thirdly, a precision and a punctuality of movement in the operations of embarkation, transit, and landing of which history affords no example, while naval opinion and experience scoff at them as

utterly impracticable. Of course the future may not resemble the past, and naval wars of the future may not be conducted on a pattern sealed by the unbroken teaching of over eight hundred years. But that is an assumption which I cannot seriously entertain.

CHAPTER VII

COMMERCE IN WAR

THE maritime trade of a nation at war has always been regarded by the other belligerent as his legitimate prey. In the Dutch Wars the suppression of the enemy's commerce was the main objective of both parties to the conflict. In all wars in which either belligerent has any commerce afloat worth considering one belligerent may always be expected to do all that he can for its capture or suppression, while the other will do as much as he can for its defence. In proportion to the volume and value of the national trade afloat is the potency of its destruction as an agency for bringing the national will into submission. If, for example, the maritime trade of England could be suppressed by her enemies, England would thereby be vanquished. Her commerce is her life-blood. On the other hand there are nations, very powerful in war, which either by reason of their geographical position, or because their oversea trade is no vital element in their national economy, would suffer comparatively little in like circumstances. It thus appears that the volume and value of the national trade afloat

is the measure of the efforts which an enemy is likely to make for its suppression. But it is not directly the measure of the efforts which a nation so assailed must make for its defence. The measure of these efforts is determined not by the volume and value of the trade to be protected but by the amount and character of the naval force which the enemy can employ in assailing it. In the Boer War British maritime commerce was unassailed and uninterrupted in all parts of the world, and yet not a single ship of the British Navy was directly employed in its protection. If on the other hand England were at war with a naval Power of the first rank, she might have to employ the whole of her naval resources in securing the free transit of her maritime commerce. So long as she can do this with success she need give no thought to the menace of possible invasion. A command of the sea so far established as to secure freedom of transit for the vast and ubiquitous maritime commerce of this country is also, of necessity, so far established as to deny free transit to the transports of an enemy seeking to invade. The greater includes the less.

It may at first sight seem to be an anomaly—some, indeed, would represent it as a mere survival of barbarism—that whereas in war on land the private property of an enemy's subjects is, by the established law and custom of civilized nations,

not liable to capture or destruction without compensation to its owners, the opposite rule still prevails in war at sea. But a little consideration will, I think, show that the analogy sought to be established between the two cases is a very imperfect one. War on land does *ipso facto* suspend in large measure the free transport of commerce in transit. As between the two belligerents it interrupts it altogether. Moreover, throughout the territory occupied by the enemy, the railways, and in large measure the roads, are practically monopolized for the movements of his troops and the transport of his supplies—in a word for the maintenance of his communications. There can have been little or no consignment of goods from Paris to Berlin or *vice versa* during the war of 1870, and even though at certain stages of the war goods might have been consigned, say, from Lyons to Geneva, or from Lille to Brussels, yet such cases are really only the counterparts of the frequent failure of one belligerent's cruisers to intercept the merchant vessels of the other on the high seas. Again, in the case of a beleaguered fortress, the besiegers would never dream of allowing a convoy of food or of munitions of war—or for the matter of that of merchandise of any kind—to enter the fortress. They would intercept it as a matter of course, and if necessary they would appropriate it to their own use. The

upshot of it all is that even in war on land the transit of all commerce, albeit the private property of some one, is practically suspended within the area of the territory occupied, and very seriously impeded throughout the whole country subject to invasion. It is not, therefore, true to say without many qualifications that in war private property is respected on land and not respected at sea. The only difference that I can discern is that by the law and custom of nations private property cannot be appropriated on land, whereas at sea it can. But this difference is not really essential. The essential thing in both cases is that the wealth of the enemy is diminished and the credit of his traders destroyed—a far more important matter in these days than the destruction of this or that cargo of his goods—by the suspension of that interchange of commodities with other nations which is the chief element of national prosperity, and may be, as in the case of England, the indispensable condition of national existence. Indeed, although private property on land is exempt from capture, and at sea it is not, yet there are many nations which would suffer far more from the interruption of their mercantile communications which war on land entails than they would from the destruction of their commerce at sea.

For these reasons I hold that the proposed exemption of private property from capture or molestation

at sea is a chimerical one. War is essentially an act of violence. It operates by the destruction of human life as well as by all other agencies which are likely to subdue the enemy's will. Among these agencies the capture or destruction of commerce afloat is by far the most humane since it entails the least sacrifice of life, limb, or liberty, and at the same time its coercive pressure may in some cases, though not in all, be the most effective instrument for compelling the enemy's submission. Moreover, it is not proposed to exempt from capture or destruction such merchant vessels of the enemy—or even of a neutral for that matter—as attempt to break a blockade. Now the modern conditions of blockade are such that the warships conducting it may be stationed hundreds of miles from the blockaded port or ports, and their outlying cruisers, remaining in touch with each other and with the main body, may be much further afield. Within the area of the organized patrol thus established, every vessel seeking to enter a blockaded port or to issue from it will still be liable to capture. In these conditions the proposal to exempt the remainder of the enemy's private property afloat from capture would be a mockery. There would not be enough of such property afloat to pay for the cost of capture.

It is an axiom of naval warfare that an assured command of the sea is at once the best defence

for commerce afloat and an indispensable condition for any such attack on it as is likely to have any appreciable effect in subduing the enemy's will. War is an affair not of pin-pricks but of smashing blows. "The harassment and distress," says Admiral Mahan, "caused to a country by serious interference with its commerce will be conceded by all. It is doubtless a most important secondary operation of naval war, and is not likely to be abandoned until war itself shall cease; but regarded as a primary and fundamental measure sufficient in itself to crush an enemy, it is probably a delusion, and a most dangerous delusion, when presented in the fascinating garb of cheapness to the representatives of a people." Here again we may discern some of the larger implications of that potent and far-reaching agency of naval warfare, the command of the sea. If a belligerent not aiming at the command of the sea, and having no sufficient naval force wherewithal to secure it, thinks to crush his enemy by directing sporadic attacks on his commerce, he will, if history is any guide, soon find out his mistake. His naval forces available for this purpose, are, by the hypothesis, inferior to those of the enemy. It is certain that they will sooner or later be hunted down and destroyed. Moreover, the mercantile flag of the weaker belligerent will, as I have shown, disappear from the sea

from the very outset of the conflict ; and the maritime commerce of such a belligerent must be of very insignificant volume if the loss entailed by its suppression is not greater than that likely to be inflicted by such a belligerent on the enemy's commerce which crosses the seas under the *ægis* of a flag which commands them. Admiral Mahan has estimated that during the whole of the war of the French Revolution and Empire the direct loss to England "by the operation of hostile cruisers did not exceed $2\frac{1}{2}$ per cent. of the commerce of the Empire ; and that this loss was partially made good by the prize ships and merchandise taken by its own naval vessels and privateers." It should be noted, however, that the Royal Commission on Food Supply was of opinion that 4 per cent. would be a more accurate estimate. It is also well known that during the same period the maritime commerce of England was doubled in volume while that of France was annihilated. In point of fact the risks run in war by commerce afloat are measured very exactly by the degree in which the flag which covers it has secured the command of the sea—that is, be it always remembered, the control of the maritime communications affected. During the War of American Independence, when British supremacy at sea was seriously challenged and at times was in grave jeopardy—owing quite

as much to faulty disposition as to inferiority of force—premiums of fifteen guineas per cent. were paid in 1782 on ships trading to the Far East; whereas from the spring of 1793 until the close of the struggle with Napoleon no premiums exceeding half that rate were paid. Yet to the very end of the war British merchant vessels were being seized even in the Channel almost every day. There is, however, good reason to think that many of these seizures were in reality collusive operations undertaken for the purpose of carrying on clandestinely the direct trade with the Continent which Napoleon sought in vain to suppress. The full history of the memorable conflict between the Berlin Decrees of Napoleon and the British Orders in Council, is still to be written. Some very illuminating sidelights are thrown on it by Mr David Hannay in a volume entitled *The Sea-Trader, His Friends and Enemies*.

It would seem to follow from these premisses—fortified as they are by other historical examples that might be cited—that of two belligerents in a naval war, that one which establishes and maintains an effective command of the sea will be absolute master of the maritime commerce of the other, while his own maritime commerce, though not entirely immune, will suffer no such decisive losses as will determine or even materially affect the course

and issue of the war ; and that he may indeed emerge from the war much stronger and more prosperous than he was at the beginning. Such is assuredly the teaching of history, and although vast changes have taken place alike in respect of the methods, opportunities, implements, and international conventions of naval war and in respect of the conditions, volume, and national importance of maritime commerce, yet I think it can be shown that the sum total of these changes has made on the whole rather for the advantage of the superior belligerent than otherwise. In the first place privateering—formerly a very effective weapon in the hands of the weaker belligerent—is now abolished. It is true that the Declaration of Paris, which recorded and ratified its abolition, has not been formally accepted by all the naval Powers of the world ; but it is also true that since its promulgation no naval Power has sought to revive privateering. It is indeed held by some that the right claimed by certain maritime Powers to convert merchant ships of their own nationality into warships by arming and commissioning them on the high seas is, or may be, equivalent to the revival of privateering in its most dangerous and aggressive form. But those who argue thus appear to overlook the fact that this process of conversion on the high seas is by the Seventh Convention of the Second

Hague Conference hedged round with a series of restrictions which differentiate the warship thus improvised very sharply from the privateer of the past. The following are the leading provisions of this Convention :—

1. A merchant ship converted into a warship cannot have the rights and duties appertaining to vessels having that status unless it is under the direct authority, immediate control, and responsibility of the Power the flag of which it flies.

2. Merchant ships converted into warships must bear the external marks which distinguish the warships of their nationality.

3. The commander must be in the service of the State and duly commissioned by the proper authorities. His name must figure on the list of the officers of the fighting fleet.

4. The crew must be subject to military discipline.

5. Every merchant ship converted into a warship is bound to observe in its operations the laws and customs of war.

6. A belligerent who converts a merchant ship into a warship must, as soon as possible, announce such conversion in the list of its warships.

This Convention has been accepted and ratified by all the great maritime Powers. It is true that it gives the converted merchant ship what may be called the dog's privilege of taking a first bite with

impunity, but it makes it very difficult for any second bite to be taken. Such a vessel may as a merchant ship have obtained coal and other supplies in a neutral port before conversion, but she cannot after conversion return to the same or another neutral port and repeat the process ; nor can she easily play the game which some have attributed to her of being a merchant ship one day, a warship the next, and a merchant ship again on the third. Further, as a weapon to be employed against England in particular, the method of conversion here prescribed would seem to be largely discounted by the fact that this country could, if it were so disposed, convert as many merchant ships into warships in this way as all the rest of the world put together.

It will be argued, perhaps, that a belligerent when hard pressed will not respect the provisions of a mere paper Convention, but will, if it suits him, treat them as non-existent. In that case it is not easy to see why he should ever have accepted and ratified them. The preamble of this very Convention recites that "whereas the contracting Powers have been unable to come to an agreement on the question whether the conversion of a merchant ship into a warship may take place upon the high seas, it is understood that the question of the place where such conversion is effected remains outside the scope

of this agreement, and is in no way affected by the following rules." In other words some of the very Powers which have ratified the Convention as it stands categorically declined to add to it a provision forbidding altogether the conversion of a merchant ship into a warship on the high seas. If this does not mean that, while reserving their freedom of action in this respect, they are prepared to abide by the provisions of a Convention which they have not less categorically accepted and ratified we are driven to the absurd conclusion that all International Law is a nullity.

Secondly, the practical disappearance of the sailing ship from the seas has profoundly modified all the pre-existing conditions affecting the attack and defence of commerce afloat. In the days of sailing, all vessels were compelled to sail according to the wind, that is, to take devious courses whenever the wind was adverse, so that some of them might at all times be found scattered over very wide areas of the seas connecting the ports of departure with those of arrival. Accordingly the sporadic attack on commerce by isolated warships cruising at large within the limits of trade routes, which might be hundreds of miles in width, was often productive of very appreciable results. There were few blank coverts on the seas to be drawn. Nowadays a steamer can always take the most direct course to

her destination. As a consequence, trade routes have now been narrowed down to what may more fittingly be called lines of communication, and these lines possess the true characteristic of all lines, namely, that they have practically no breadth. Thus the areas bounded by these lines are nowadays all blank coverts. Any one who happens to cross the Atlantic, as I have crossed it more than once, by one of the less frequented routes, will know that the number of vessels sighted in a voyage quite as long as any warship could take without coaling may often be counted on the fingers of one hand. Another characteristic of these lines is that though their points of departure and destination are fixed, yet the lines joining these points may be varied if necessary to such an extent that any warship hovering about their ordinary direction would be thrown entirely off the scent. On the other hand their ports of departure and destination being fixed, the lines of communication must inevitably converge as they approach these points. There are other points also more in the open at which several lines of communication may intersect. At these "terminal and focal points," as Mr Corbett has aptly called them, the belligerent, being by hypothesis inferior to his adversary, must needs endeavour to concentrate his attack on his enemy's commerce, because at any other points the game would not be worth the candle.

But it is precisely at these points that the superior adversary will concentrate his defence, and being superior, will take care to do so in force sufficient for the purpose. So far as the remaining portions of the lines of communication need any direct defence at all this can be afforded, if and when necessary, by collecting the merchant ships about to traverse them into convoys and giving them an escort sufficiently powerful to deal effectually with attacks which from the nature of the case can only be sporadic and intermittent. Be it remembered that the last thing a warship bent on commerce destruction wants is to encounter an enemy in superior or even in equal force. The moment she does so her game is up.

Thirdly, the substitution of steam for sails has very largely reduced the enduring mobility of the commerce-destroying warship. In time of war no warship will ever go further from the nearest available supply of coal than is represented by considerably less than half of the distance that she can steam at full speed with her bunkers full. If she does so she runs the risk, if chased, of burning her last pound of coal before she has reached shelter. Coaling at sea is only possible in exceptional circumstances, and is in any case a very tedious operation. A warship which attempts it will be taken at a great disadvantage if an enemy catches her in the process. Colliers, moreover, are exposed to capture while

proceeding to the appointed* rendezvous, and if they fail to reach it the warship awaiting them will be placed in extreme danger. All these difficulties and dangers may be surmounted once and again, but they must needs put a tremendous handicap in the long run on the commerce-destroying efforts of a belligerent who is not superior to his adversary at sea. Of course if he is superior at sea the enemy's commerce will be at his mercy, and nothing can prevent its destruction or at least its total suppression. But that is not the hypothesis we are considering.

Fourthly, the power of the modern warship to send her prizes into court for adjudication, or to destroy them off-hand on capture is much more limited than was that of her sailing predecessor. If she sends them into port she must either put a prize crew on board or escort them herself. In the former case the prizes, and in the latter case both prizes and their captors are liable to recapture, a liability which becomes the greater in proportion as the enemy is superior at sea. As to the former alternative, moreover, the crew of a modern man-of-war is highly specialized, and in particular its engine-room complement, which must furnish a portion of every prize crew, is at the outset no greater than is required for the full fighting efficiency of the ship. It is probable, therefore, that the captor would in nearly all cases adopt the alternative of destroying

his prizes at sea. In that case there will be no prize money for any one concerned, but that is perhaps a minor consideration. A far more important consideration is that before destroying the prize the captor must take its crew on board and provide food and accommodation for them. Any other course would be sheer piracy and would inevitably lead to drastic reprisals. Now, before the captor had destroyed many prizes in this fashion—especially if even one of them happened to be a passenger steamer well filled with passengers—she would find herself gravely embarrassed by the number of her prisoners, and the need of providing for them even in the roughest fashion. A captain having to fight his ship even with a few hundreds of prisoners on board would be in no very enviable position.

The foregoing are the leading considerations which appear to me to govern the problem of the attack and defence of maritime commerce in modern conditions of naval warfare. I have discussed the question in greater detail in a work entitled *Nelson and Other Naval Studies*, and as I have seen no reason to abandon or substantially to modify the conclusions there formulated, I reproduce them here for the sake of completeness :—

1. All experience shows that commerce-destroying never has been, and never can be, a primary object of naval war.

2. There is nothing in the changes which modern times have witnessed in the methods and appliances of naval warfare to suggest that the experience of former wars is no longer applicable.

3. Such experience as there is of modern war points to the same conclusion and enforces it.

4. The case of the "Alabama," rightly understood, does not disallow this conclusion but rather confirms it.

5. Though the volume of maritime commerce has vastly increased, the number of units of naval force capable of assailing it has decreased in far greater proportion.

6. Privateering is, and remains abolished, not merely by the fiat of International Law, but by changes in the methods and appliances of navigation and naval warfare which have rendered the privateer entirely obsolete.

7. Maritime commerce is much less assailable than in former times, because the introduction of steam has confined its course to definite trade routes of extremely narrow width, and has almost denuded the sea of commerce outside these limits.

8. The modern commerce destroyer is confined to a comparatively narrow radius of action by the inexorable limits of her coal supply. If she destroys her prizes she must forgo the prize money and find accommodation for the crews and passengers of

the ships destroyed.* If she sends them into port she must deplete her engine-room complement and thereby gravely impair her own efficiency.

9. Torpedo craft are of little or no use for commerce destruction except in certain well-defined areas where special measures can be taken for checking their depredations.

Of course all this depends on the one fundamental assumption that the commerce to be defended belongs to a Power which can, and does, command the sea. On no other condition can maritime commerce be defended at all.

CHAPTER VIII

THE DIFFERENTIATION OF NAVAL FORCE

A WARSHIP, considered in the abstract, may be defined as a vessel employed, and generally constructed, for the purpose of conveying across the seas to the place of conflict, the weapons that are to be used in conflict, the men who are to use them, and all such stores, whether of food or other supplies, as will give to the vessel as large a measure of enduring mobility as is compatible with her displacement. If we confine our attention to the period posterior to the employment of the gun on ship-board as the principal weapon of offence, and if we regard the torpedo as a particular kind of projectile, and the tube from which it is discharged as a particular kind of gun, we may condense this definition into the modern formula that a warship is a floating gun-carriage. With the methods and implements of sea warfare anterior to the introduction of the gun we need not concern ourselves. They belong to the archæology of the subject. It suffices to point out that in all periods of naval warfare the nature of the principal weapon employed, and to some extent that of the motive power available,

have not only governed the structure of the ship and determined the practicable limit of its displacement, but have also exercised a dominant influence over the ordering of fleets and their disposition in action. Sea tactics have never been more elaborate than they were in the last days of the galley period which came to an end with the Battle of Lepanto in 1571, less than a score of years before the defeat of the Armada in 1588. But the substitution of sails for oars as the motive power of the warship and the more general employment of the gun as the principal weapon of offence necessarily entailed radical changes in the tactical methods which had been slowly evolved during the galley period. At first all was confusion and a sea-fight was reduced for a time to a very disorderly and tumultuous affair. "We went down in no order," wrote an officer who was present at Trafalgar, "but every man to take his bird." This is a very inaccurate and even more unintelligent account of the tactics pursued at Trafalgar; but it might very well stand for a picturesque summary of the tactical confusion which prevailed at the period of the Armada and for half a century afterwards.

Gradually, however, order was again evolved out of the prevailing chaos. But it was not the old order. It was a new order based on the predominance of the gun and its disposition on board the

ship. To go down in no order and for each man to take his bird would mean that each ship, whether large or small, would be free as far as circumstances permitted to select an adversary not disproportioned in strength to herself, so that there was no very pressing need for the fleet to consist of homogeneous units, nor for the elimination of comparatively small craft from a general engagement. But in the course of the Dutch Wars the practice was slowly evolved of fighting in a compact or close-hauled line, the ships being ranged in a line ahead—that is, each succeeding ship following in the wake of her next ahead—in order to give free play to the guns disposed mainly on the broadside, and being, for purposes of mutual support, disposed as closely to each other as was compatible with individual freedom of evolution and manœuvre. This disposition necessarily involved the exclusion from the line of battle of all vessels below a certain average or standard of fighting strength, since it was no longer possible for “every man to take his bird” and a weak ship might find herself in conflict with an adversary of overpowering strength in the enemy’s line. Hence the main fighting forces of naval belligerents came in time to be composed entirely of “ships fit to lie in a line,” as Torrington phrased it, of “capital ships,” as they were frequently called in former days, of “line of battle ships”

or "ships of the line," as afterwards they were more commonly called, or of "battleships" as is nowadays the accepted appellation. Other elements of naval force not "fit to lie in a line" were also required, as I am about to show, and took different forms at different times, but the root of the whole evolution lies in the elimination of the non-capital ship from the main fighting line. In a very instructive chapter of his *Naval Warfare*, Admiral Colomb has traced the whole course of this gradual "Differentiation of Naval Force." But for my purpose it suffices to cite the briefer exposition of a French writer quoted by Admiral Mahan in his *Influence of Sea Power upon History* :—

"With the increase of the power of the ship of war, and with the perfecting of its sea and warlike qualities, there has come an equal progress in the art of utilizing them. . . . As naval evolutions become more skilful, their importance grows from day to day. To these evolutions there is needed a base, a point from which they depart and to which they return. A fleet of warships must always be ready to meet an enemy; logically, therefore, this point of departure for naval evolutions must be the order of battle. Now since the disappearance of galleys, almost all the artillery is found upon the sides of a ship of war. Hence it is the beam that must necessarily and always be turned toward the

enemy. On the other hand it is necessary that the sight of the latter must never be interrupted by a friendly ship. Only one formation allows the ships of the same fleet to satisfy fully these conditions. That formation is the line ahead. The line, therefore, is imposed as the only order of battle, and consequently as the basis of all fleet tactics. In order that this line of battle, this long thin line of guns, may not be injured or broken at some point weaker than the rest, there is at the same time felt to be the necessity of putting in it only ships which, if not of equal force, have at least equally strong sides. Logically it follows, at the same moment in which the line ahead became definitely the order for battle, there was established the distinction between the 'ships of the line' alone destined for a place therein, and the lighter ships meant for other uses."

But the need for other and lighter ships "meant for other uses" and not "fit to lie in a line," is equally demonstrable. The function of battleships is to act in concert. They must therefore be concentrated in fleets sufficiently strong to give a good account of the enemy's fleets opposed to them. This does not necessarily mean that all the fleets of a belligerent must be concentrated in a single position. But it does mean that if disposed in accordance with the dispositions of the enemy they must

be so disposed and connected, that, moving on interior lines, they can always bring a superior force to the point of contact with the enemy. Subject to this paramount condition, that of being able to concentrate more rapidly than the enemy can, dispersal of naval force—not of units but of organized fighting fleets—is generally a better disposition than extreme concentration. But it is a fatal error in strategy so to disperse your fleets as to expose them to the risk of being overpowered by the enemy in detail.

The fleets of capital ships thus organized, and disposed as occasion may require and sound strategy dictate, are not, however, by any means to be regarded as autonomous and self-sufficing organisms. They are rather to be regarded as the moving base of a much larger organization, much more widely dispersed, consisting of lighter vessels not fit to lie in a line, but specially adapted to discharge functions which capital ships cannot as such discharge, yet which are indispensable either to the full efficiency of the latter or to the maintenance of an effective command of the sea. The first of these functions is the collection and rapid transmission of intelligence as to the enemy's dispositions and movements over as wide an area of the waters in dispute as is compatible with communication rapid enough to allow of counter-movements being made before it

is too late. The development of wireless telegraphy has largely extended this area, but it is not without limits in practice, and those limits are already narrower than the extreme range of a single transmission by wireless telegraphy. For example, a warship in the Levant might, if the conditions were exceptionally favourable, communicate by direct wireless with another warship in the Orkneys. But the information thus transmitted would hardly be likely directly to influence the movements and dispositions of the latter. If it did it would probably not be through the immediate initiative of the Admiral commanding in the North Sea, but through the supreme control of all the naval forces of the belligerent affected, exercised through the General Staff of the Navy at the seat of Government. It may here be remarked in passing that the development of wireless telegraphy will probably be found in war to strengthen this supreme control and to weaken to that extent the independent and isolated initiative of individual Commanders-in-Chief. But that is not necessarily a disadvantage, and even so far as it is disadvantage at all it is more than balanced by the immense corresponding advantage of keeping the War Staff at all times in direct touch with every part of the field of naval operations, and thereby making it the focus of all available information, and the directing authority for all the

larger strategy of the campaign. Except in degree, moreover, there is nothing new in this. When Nelson was returning across the Atlantic, after chasing Villeneuve out of the West Indies, his only way of informing the Admiralty of the nature of the situation was to send on Bettesworth in the brig "Curieux" with his news. Nowadays a modern "Curieux" would be able to send on the news as soon as she came within fifteen hundred or possibly two thousand miles from the British Isles, and Nelson at the same distance might have received his orders direct from the Admiralty. But the special point to note is that as soon as Bettesworth's information was received at the Admiralty, Barham, the First Lord of the Admiralty, instantly issued orders which profoundly modified the dispositions of the fleets engaged in blockading the French ports and led directly to Calder's action off Finisterre, and in the sequel to the abandonment by Napoleon of all his projects of invasion and the destruction of the allied fleets at Trafalgar. There were giants in those days both afloat and ashore. But the giants afloat did not resent the interference of the giants ashore, and, as Mr Corbett has shown, the Trafalgar campaign was conducted with consummate sagacity by Barham, who embodied in himself the War Staff of the time.

Such is the transcendent importance of intelli-

gence, and of its collection, transmission, collation, interpretation, and translation into supreme executive orders. Its collection and transmission is mainly the function of cruising ships disposed either individually or in small groups for the purpose, and at such a distance from the main body of battleships as is not incompatible with the movements of the latter being controlled and directed, either by their immediate commanders, or by the War Staff at the centre, according to the information received from the outlying cruisers. Such cruising vessels may vary in size and strength from the modern battle-cruiser, so heavily armed and armoured as to be not incapable of taking a place, on occasion, in the line of battle, down to the smallest torpedo craft which is endowed with sufficient enduring mobility to enable her to keep the sea and to cruise as near as may be to the enemy's ports. I have already indicated the other collateral functions which will have to be discharged by torpedo craft in case of a blockade and pointed out the vital distinction which differentiates them from the small craft of the past in that in certain circumstances they are capable of taking a formidable part in a fleet action even as against the most powerful battleships. But we are here considering them solely from the point of view of their cruising functions, whether as guarding their own shores or watching those of the enemy

with a view to fighting on occasion and to observation at all times. Their supports will be cruisers of larger size, disposed at suitable distances in the rear, and themselves supported in like manner by successive cordons or patrols of cruisers increasing in size and power, until we come to the battle fleet as the concentrated nucleus of the whole organization. This is merely an abstract or diagrammatic exposition of such an organization, and it is of course liable to almost infinite variation in the infinite variety of warlike operations at sea, but it serves to exhibit the *rationale* of the differentiation of naval force into battleships, cruisers, and small craft.

It has sometimes been argued that, inasmuch as the torpedo craft is, or may be, in certain conditions, more than a match for even the biggest battleship, battleships together with all intermediate ships between the battleship and the torpedo vessel, are not unlikely to be some day regarded as superfluous and in consequence to be discarded altogether from the naval armament of even a first-class maritime Power. It is true that the range and accuracy of the torpedo have latterly undergone an immense development, so that a range of even ten thousand yards or five sea-miles is no longer beyond its powers. It is true that the development of the submarine vessel has vastly intensified the menace of the tor-

pedo and it may soon be true that the development of aircraft will add a new and very formidable menace to the supremacy of the battleship. But except for this last consideration, which is at present exceedingly speculative, a little reflection will disclose the underlying fallacy of arguments of this kind. The enduring mobility of the torpedo craft is necessarily limited. It is incapable of that wide range of action which is required of warships if they are to establish and maintain any effective command of the sea. It is exceedingly vulnerable to ships of a larger size, and of more ample enduring mobility. These again will be vulnerable in their turn to ships of a still larger size and thus the logic of the situation brings us back to the battleship once more with its characteristic functions. It may perhaps be urged that this chain of argument takes too little account of the submarine vessel which is at present singularly invulnerable because for the most part invisible to any vessels, whether big or little, which operate only on the surface and even if discovered betimes by the latter, is not very readily assailable by them. But of two things one. Either the submarine vessel will remain small and therefore weak, and lacking in enduring mobility, in which case it can never establish and maintain an effective command of the sea. Or it will grow indefinitely in size, in which case it will fall under the in-

exorable stress of the logic which brings us back once more to the battleship. It may be that the battleship of the still distant future will be a submersible battleship. But many exceedingly complex problems of construction and stability will have to be solved before that consummation is reached.

Lastly, the specific function of the so-called battle-cruiser would seem to need some further elucidation. At first sight this hybrid type of vessel might seem to be an anomalous intrusion into the time-honoured hierarchy of battleship, cruiser, and small craft, which the ripe experience of many wars, battles, and campaigns had finally established in the last golden days of the sailing ship period. It is indeed held by some high authorities that the battle-cruiser is in very truth a hybrid and an anomaly, and that no adequate reason for its existence can be given. In face of these opinions I cannot presume to dogmatize on the subject. But some not wholly irrelevant considerations may be advanced. The battle-cruiser is, as its name implies, a vessel not only fitted by the nature of its armour and armament "to lie in a line," whenever occasion may require, but also exceedingly well qualified by its armour and armament, and still more by its speed, to discharge many of the functions of a cruiser either alone or in company with other cruisers. In this latter

capacity, it can overhaul nearly every merchant ship afloat, it can scout far and wide, it can push home a vital reconnaissance in cases where a weaker and slower cruiser would have to run away if she could, it can serve as a rallying point to a squadron of smaller cruisers engaged in the defence of this or that vital line of communication, and alone or in company with a consort of the same type it can hold the terminal and focal points of any such line against almost any number of hostile cruisers inferior in defensive and offensive powers to itself. Such are its powers and capacities when acting as a cruiser proper. But it may be thought that in the stress of conflict it will have very little opportunity of displaying these very exceptional powers because an admiral in command of a fighting fleet will never, when anticipating an engagement with the enemy, consent to weaken his fighting line by detaching so powerful a unit for scouting or other cruising purposes. That is as it may be. It will depend on many circumstances of the moment not to be clearly anticipated or defined beforehand; on the strength of the enemy's force, on the personality, sagacity, and fortitude of the admiral—whether he is or is not a man of the mettle and temper ascribed to Nelson by Admiral Mahan in a passage already quoted—on the comparative need as determined by the circumstances of the moment of scouting for informa-

tion, of cruising for the defence of trade, or of strengthening the battle line for a decisive conflict to the uttermost extent of the nation's resources. It is unbecoming to assume that in the crisis of his country's fate an admiral will act either as a fool or as a poltroon. It is the country's fault if a man capable of so acting is placed in supreme command, and for that there is no remedy. But it is sounder to assume that the admiral selected for command is a man not incapable of disposing his force to the best advantage. "We must," said Lord Goschen, on one occasion, "put our trust in Providence and a good admiral." If a nation cannot find a good admiral in its need it is idle to trust in Providence.

It remains to consider the function of the battle-cruiser in the line of battle. The lines of battle in former times were often composed of ships of varying size and power. There was a legitimate prejudice against ships of excessive size, although their superior power in action was recognized—we have the unimpeachable testimony on that point of Nelson's Hardy, a man of unrivalled fighting experience to whom Nelson himself attributed "an intuitive right judgment"—because they were unhandy in manœuvre and slow in sailing as compared with ships of more moderate dimensions. But except for difficulties of docking—a very serious

consideration from the financial point of view—hardly any limit can be assigned to the size of the modern warship on these particular grounds. Quite the contrary. Other things being equal, the bigger the ship the higher the speed, and it is well known that ships of the Dreadnought type are as handy to steer as a torpedo boat. For tactical reasons, moreover, it is not expedient to lengthen the line of battle unduly. Hence there is a manifest advantage in concentrating offensive power, as far as may be, in single units. On the other hand, the experience and practice of the eighteenth century showed conclusively that there was also a distinct advantage in having in the line of battle a certain number of ships which, being smaller than their consorts were more handy and faster sailing than the latter. The enemy might not want to fight. Very often he did not, and by crowding all possible sail he did his best to get away. In this case the only way to bring him to action was for the pursuing admiral to order “a general chase”—that is, to direct his ships, disregarding the precise line of battle, to hurry on with all possible sail after the enemy so that the fastest ships of the pursuing fleet might bring individually to action the laggards of the retreating fleet and hold them until the main body of the pursuing fleet came up. In this case the retreating admiral must either return to the

succour of his ships astern and thereby accept the general action which he sought to avoid, or abandon his overtaken ships to the enemy without attempting to rescue them. Hawke's action in Quiberon Bay and Duncan's action off Camperdown are two of the most memorable examples of this particular mode of attack, and their brilliant results are a striking testimony to its efficacy. If ever in the naval battles of the future it becomes expedient for an admiral to order a general chase, it stands to reason that ships of the battle-cruiser type will be invaluable for the purpose. Their speed will enable them to hold the tail of the enemy's line, and their power will enable them to crush it unless the retreating admiral who seeks to avoid a decisive action turns back to succour such of his ships as are assailed and thereby renders a decisive action inevitable.

There is, moreover, another function to be assigned to the battle-cruiser in a general action, and that is a function which was defined once for all by Nelson himself in the immortal memorandum in which he explained to his captains the mode of attack he proposed to carry out at Trafalgar. "I have," wrote Nelson, "made up my mind to keep the fleet in that position of sailing . . . that the order of sailing is to be the order of battle, placing the fleet in two lines of sixteen ships each, with

an advanced squadron of eight *of the fastest sailing two-decked ships* which will always make, if wanted, a line of twenty-four sail, on whichever line the Commander-in-Chief may direct." Owing to the lack of ships this disposition was not adopted on the day of Trafalgar, but the principle involved is not affected by that circumstance. That principle is that a squadron of the fastest sailing ships in the fleet was to be detached from the two fighting lines entrusted with the initial attack, and reserved or "refused" until the development of the main attack had disclosed to the Commander-in-Chief the point at which the impact of this "advanced squadron" would by superior concentration on that point secure that the enemy should there be decisively overpowered. The essence of the matter is that the ships so employed should by virtue of their superior speed be endowed with a tactical mobility sufficient to enable them to discharge the function assigned to them. I need hardly insist on the close analogy which subsists between Nelson's "advanced squadron" and a modern squadron of battle-cruisers similarly employed, and although the conflict of modern warships must needs differ in many essential respects from the conflicts of sailing ships in Nelson's days, yet I think a clear and authoritative exposition of one at least of the uses and functions of the battle-cruiser in a fleet action may

still be found in what I have called elsewhere "the last tactical word of the greatest master of sea tactics the world has ever known, the final and flawless disposition of sailing ships marshalled for combat."

CHAPTER IX

THE DISTRIBUTION AND SUPPLY OF NAVAL FORCE

THE measure of naval strength required by any State is determined mainly by the naval strength of its possible adversaries in the event of war, and only in a secondary degree by the volume of the maritime interests which it has to defend. Paradoxical as the latter half of this proposition may seem at first sight, it can easily be shown to be sound. The maritime interests, territorial and commercial, of the British Empire are beyond all comparison greater than those of any other State in the world ; but if no other State possessed a naval force strong enough to assail them seriously, it is manifest that the naval force required to defend them need be no greater than is sufficient to overcome the assailant, and would not therefore be determined in any degree by the volume of the interests to be defended. Each State determines for itself the measure of naval strength which it judges to be necessary to its security. No State expects to have to encounter the whole world in arms or makes its provision in view of any such chimerical contingency. The utmost that any State can do is to adjust its naval

policy to a rational estimate of all the reasonably probable contingencies of international conflict, due regard being had to the extent of its financial resources and to such other requirements of national defence as circumstances impose on it. Germany, for example, has proclaimed to all the world in the preamble to the Navy Law of 1900 that—

“In order to protect German trade and commerce under existing conditions, only one thing will suffice, namely, Germany must possess a battle fleet of such strength that even for the most powerful naval adversary a war would involve such risks as to make that Power's own supremacy doubtful. For this purpose it is not absolutely necessary that the German fleet should be as strong as that of the greatest naval Power, for, as a rule, a great naval Power will not be in a position to concentrate all its forces against us.”

I am not concerned in any way with the political aspects of this memorable declaration. But its bearing on the naval policy of the British Empire is manifest and direct. England is beyond all question “the greatest naval Power” in the world. The declaration of Germany thus lays upon England the indefeasible obligation of taking care that by no efforts of any other Power shall her “own supremacy”—that is her capacity to secure and maintain the command of the sea in all reasonably probable

contingencies of international conflict—be rendered doubtful. There is no State in the world on which decisive defeat at sea would inflict such irretrievable disaster as it would on England and her Empire. These islands would be open to invasion—and if to invasion to conquest and subjugation—the commerce of the whole Empire would be annihilated, and the Empire itself would be dismembered. I need not attempt to determine what measure of naval strength is required to avert this unspeakable calamity. It suffices to say that whatever the measure may be it must be provided and maintained at all hazards. That is merely the axiomatic expression of the things that belong to our peace.

It will be observed that the German declaration assumes that "a great naval Power will not, as a rule, be in a position to concentrate all its forces against" a single adversary. This raises at once the question of the distribution of naval force, or of what has been called the peace strategy of position. I shall endeavour to discuss the problem with as little reference as may be to an actual state of war between any two individual and specific naval Powers. I shall merely assume that of two possible belligerents one is so far stronger than the other as to look with confidence to being able in the event of war to secure and maintain its own command of the sea ; and in order not to complicate the problem

unduly I shall include in the term "belligerent" not merely a single Power but an alliance of one or more separate Powers, while still adhering to the assumption that the relative strength of the two belligerents is as defined above. If England is one of the Powers affected it is manifest from what has already been said that this assumption is a legitimate one.

In such a situation it stands to reason that the concentration of the whole force of the stronger belligerent against the whole force equally concentrated of the weaker belligerent would not be necessary and would very rarely be expedient. The stronger belligerent would of course seek, in time of war, so to dispose his forces as to make it impossible for the weaker fleets of his adversary to take the sea without being brought to a decisive action, and he would so order his peace strategy of position as to further that paramount purpose. But it does not follow that being superior in the measure above defined he would need to concentrate all his available forces for that purpose. He would concentrate so much of his forces as would ensure victory in the encounters anticipated—so far as mere numbers apart from fighting efficiency can ensure victory—and the residue would be available for other and subsidiary purposes. If there were no residue, then the required superiority would

not have been attained, and the belligerent who has neglected to attain it must take the consequences. One of these consequences would certainly be that the other and subsidiary purposes above mentioned would have to be neglected until the main issue was decided, and if these purposes were of any moment he would have so far to pay the penalty of his neglect. Nothing is more fatal in warfare than to attempt to be equally strong everywhere. If you cannot do everything you desire at once you must concentrate all your energies on doing the most important and the most vital things first. When the tree is cut down the branches will fall of themselves. The history of the War of American Independence is full of illustrations of the neglect of this paramount principle. England was worsted much more by faulty distribution than by insufficiency of force.

At the same time it must be observed that the outlying and subsidiary purposes of the conflict cannot be of vital moment so long as the superior belligerent is at firm grips with the central forces of his adversary. We are dealing with the assumption that of two belligerents one is so far superior to the other that he may entertain a reasonable confidence of being able to deny the command of the sea to his adversary and in the end to secure it for himself. It is an essential part of this assumption

that the forces of the superior belligerent will be so disposed as to make it exceedingly difficult and, subject to the fortune of war, practically impossible for any considerable portion of the enemy's forces to act on a vigorous offensive without being speedily brought to book by a superior force of his adversary, and that the peace strategy of the latter will have been ordered to that end. So long as this is the case the virtual command of the sea will be in the hands of the superior belligerent, even though his forces may be so concentrated, in accordance with the dispositions of the enemy, as to leave many regions of the sea apparently unguarded. They are adequately guarded by the fact that the enemy is *ex hypothesi* unable to reach them—or if by a successful evasion of his adversary's guard he manages to send a detachment, large or small, to aim at some outlying objective, the initial superiority of force possessed by his adversary will always enable the latter to send a superior force in pursuit of the fugitive. Much harm may be done before the fugitive is brought to book, but no State, however strong, need ever expect to go to war without running risks and suffering occasional and partial reverses.

It is thus a pure delusion to assume, as loose thinkers on the subject too often assume, that the command of the sea must be either surrendered or

imperilled by a superior belligerent who, apparently neglecting those regions of the sea which are not immediately assailed or threatened, concentrates his forces in the positions best calculated to enable him to get the better of his adversary, or who in time of peace so orders his strategy of position as to secure that advantage at once should war unhappily break out. Not long ago the Leader of the Opposition in the House of Commons used the following words :—"Ten years ago we not only had the command of the sea, but we had the command of every sea. We have the command of no sea in the world except the North Sea at this moment." Those who have followed and assimilated the exposition of the true meaning of the command of the sea given in these pages will readily discern how mischievous a travesty of that meaning is contained in these words. There is, as I have shown, no such thing as a command of the sea in time of peace. The phrase is merely a definition of the paramount objective of naval warfare as such. Ten years ago we had no command of any sea because we were not at war with any naval Power. The concentration of a large portion of our naval forces in the North Sea is no surrender of our command of the sea in any part of the world, because that command does not exist, never has existed in time of peace, and never can exist even in time of war until

we have fought for it and secured it. The concentration in question is, together with the simultaneous disposition of the residue of our naval forces in different parts of the world, merely the expression of that peace strategy of position which, in the judgment of those who are responsible for it, is best calculated in the more probable, yet possibly quite remote, contingencies of international conflict, to enable our fleets to get the better of our enemies and thereby ultimately to secure the command of the sea in any and every part of the world in which we have maritime interests to defend. There are, it is true, some disadvantages involved in a close and sustained concentration of naval forces, especially in home waters. Naval officers lose in breadth and variety of experience and in the self-reliance which comes of independent command, while the prestige of the flag is in some measure diminished by the infrequency of its appearance in distant seas. But these, after all, are subsidiary considerations which must be subordinated to the paramount needs of a sound strategy, whether offensive or defensive.

It follows from the foregoing exposition of the principles which govern the strategic distribution of naval force in peace and war that a great naval Power must often maintain fleets of considerable strength in distant seas. England has for many generations maintained such a fleet in the Medi-

terranean, and it is hard to see how any reasonably probable change in the international situation could absolve her from that obligation. There are other and more distant stations on which she has maintained and still does maintain squadrons in a strength which has varied greatly from time to time in accordance with the changing phases of international relations and of strategic requirements as affected thereby. The measure of these requirements is determined from time to time by the known strength of the hostile forces which would have to be encountered in any reasonably probable contingencies of international conflict. But there is one antecedent requirement which is common to all considerable detachments of naval force in distant waters. In order to maintain their efficiency and mobility they must have a naval base conveniently situated within the limits of their station to which they may resort from time to time for repair, refit, and supply. The need for supply at the base is less paramount than that for refit and repair, because it is manifest that the control of maritime communications which has enabled the requisite stores to reach the base will also enable them to reach the ships themselves, wherever they may be at the moment. But for all refit and repair which cannot be effected by the ships' companies themselves, with the aid of an attached repair ship,

the ships must go to the base, and that base must be furnished with docks capable of receiving them.

It is essential to note that the base is there for the sake of the ships. The ships are not there for the sake of the base. It is a fatal inversion of all sound principles of naval strategy to suppose that the ships owe, or can afford, to the base any other form of defence than that which is inherent in their paramount and primary task of controlling the maritime communications which lead to it. So long as they can do this the base will be exposed only to such attacks as can be delivered by a force which has evaded but not defeated the naval guard, and to this extent the base must be fortified and garrisoned; for, of course, if the naval guard has been decisively defeated, the control of maritime communications has passed into the hands of the enemy, and nothing but the advance of a relieving naval force, too strong for the enemy to resist, can prevent the base being invested from the sea and ultimately reduced. It will be seen from this how absurd it is ever to speak of a naval base as commanding the adjacent seas. As such it does not command, and never can command, any portion of the sea which lies beyond the range of its own guns. All that it ever does or can do is, by its resources for repair, refit, and supply, to enable the fleet based upon it constantly to renew its efficiency

and mobility, and thereby to discharge its appointed task of controlling the maritime communications entrusted to its keeping. But such command is in all cases exercised by the fleet and not by the base. If the fleet is not there or not equal to its task, the mere possession of the base is nearly always a source of weakness and not of strength to the naval Power which holds it.

It is held by some that the occupation of naval bases in distant seas by a Power which is not strong enough to make sure of controlling the maritime communications which alone give to such bases their strategic value and importance is a great advantage to such a Power and a corresponding disadvantage to all its possible adversaries in war. It will readily be seen from what has been said that this is in large measure a delusion. As against a weaker adversary than itself the occupation of such bases may be an appreciable advantage to the Power which holds them, but only if the adversary in question has in the waters affected interests which are too important to be sacrificed without a struggle. On the other hand, as against an adversary strong enough to secure the command of the sea and determined to hold it at all hazards, the occupation of such distant bases can very rarely be of any advantage to the weaker belligerent and may very often expose him to reverses which, if not positively

disastrous, must always be exceedingly mortifying. Of two things one. Either the belligerent in such a plight must detach a naval force sufficient to cover the outlying base, and thus, by dispersing naval forces which he desired to keep concentrated, he must expose his detachment to destruction by a stronger force of the enemy, or he must leave the base to its fate, in which case it is certain to fall in the long run. In point of fact the occupation of distant bases by any naval Power is merely the giving of hostages to any and every other Power which in the day of conflict can establish its command of the sea. That is the plain philosophy of the whole question.

It only remains to consider very briefly the question of the supply of fleets operating in distant waters. In a very interesting and suggestive paper on the "Supply and Communications of a Fleet," Admiral Sir Cyprian Bridge has pointed out that "in time of peace as well as in time of war there is a continuous consumption of the articles of various kinds used on board ship, viz., naval stores, ordnance stores, engineers' stores, victualling stores, coal, water, etc." Of these the consumption of victualling stores is alone constant, being determined by the number of men to be victualled from day to day. The consumption of nearly all the other stores will vary greatly according as the ship is more or less at sea, and it is safe to say that for

a given number of ships the consumption will be much greater in time of war, especially in coal, engineers' stores, and ordnance stores, than it is in time of peace. But in peace conditions Admiral Bridge estimated that for a fleet consisting of four battleships, four large cruisers, four second-class cruisers, thirteen smaller vessels of various kinds, and three torpedo craft, together with their auxiliaries, the *minimum* requirements for six months—assuming that the ships started with full supplies, and that they returned to their principal base at the end of the period—would be about 6750 tons of stores and ammunition, and 46,000 tons of coal, without including fresh water. The requirements of water would not be less than 30,000 tons in the six months, and of this the ships could distil about half without greatly increasing their coal consumption; the remainder, some 15,000 or 16,000 tons, would have to be brought to them. In time of war the requirements of coal would probably be nearly three times as great as in time of peace, and the requirements of ammunition—estimated in time of peace at 1140 tons—might easily be ten times as great. Thus in addition to the foregoing figures we have 16,000 tons of water, and in war time a further *minimum* addition of some 90,000 tons of coal and 10,260 tons of ammunition, making in all a round total of 170,000 tons for a

fleet of the size specified, which was approximately the strength of the China Fleet, under the command of Admiral Bridge, at the time when his paper was written.

All these supplies have to be delivered or obtained periodically and at convenient intervals in the course of every six months. They are supplies which the ships must obtain as often as they want them without necessarily going back to their principal base for the purpose, and even the principal base must obtain them periodically from the home sources of supply. There are two alternative ways of maintaining this continuous stream of supply. One is that in advance of the principal base, what is called a secondary base should be established from which the ships can obtain the stores required, a continuous stream of transports bringing the stores required to the secondary base from sources farther afield, either from the principal base or from the home sources of supply. The other method is to have no secondary base—which, since it contains indispensable stores, must be furnished with some measure of local defence, and which, as a place of storage, may turn out to be in quite the wrong place for the particular operations in hand—but to seize and occupy a “flying base,” neither permanent nor designated beforehand, but selected for the occasion according to the exigencies of the strategic situation,

and capable of being shifted at will in response to any change in those exigencies. History shows that the latter method has been something like the normal procedure in war alike in times past and in the present day. The alternative method is perhaps rather adapted to the convenience of peace conditions than to the exigencies of war requirements. During his watch on Toulon Nelson established a flying base at Maddalena Bay, in Sardinia, and very rarely used the more distant permanent base at Gibraltar. Togo, as I have stated in an earlier chapter, established a flying base first at the Elliot Islands and afterwards at Dalny, during the war in the Far East. Instances might easily be multiplied to show in which direction the experience of war points, and how far that direction has been deflected by the possibly deceptive teaching of peace. I shall not, however, presume to pronounce *ex cathedra* between two alternative methods each of which is sanctioned by high naval authority. I will only remark in conclusion that though the establishment of permanent secondary bases may, in certain exceptional cases, be defensible and even expedient, yet their multiplication, beyond such exceptional cases of proved and acknowledged expediency, is very greatly to be deprecated. The old rule applies—*Entia non sunt præter necessitatem multiplicanda*.

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My task is now finished—I will not say completed, for the subject of naval warfare is far too vast to be exhausted within the narrow compass of a Manual. I should hardly exaggerate if I said that nearly every paragraph I have written might be expanded into a chapter, and every chapter into a volume, and that even so the subject would not be exhausted. All I have endeavoured to do is to expound briefly and in simple language the nature of naval warfare, its inherent limitations as an agency for subduing an enemy's will, the fundamental principles which underlie its methods, and the concrete problems which the application of those methods presents. Tactical questions I have not touched at all; strategic questions only incidentally, and so far as they were implicated in the discussion of methods. Political issues and questions of international policy I have eschewed as far as might be, and so far as it was necessary to deal with them I have endeavoured to do so in broad and abstract terms. Of the many shortcomings in my handling of the subject no one can be more conscious than I am myself. Yet I must anticipate one criticism which is not unlikely to be made, and that is that I have repeated and insisted on certain phrases and ideas such as "command of the sea," "control of maritime communications," "the fleet in being," "blockade," and the like, until they

might almost be regarded as an obsession. Rightly or wrongly that has, at any rate, been done of deliberate intent. The phrases in question are in all men's mouths. The ideas they stand for are constantly misunderstood, misinterpreted, and misapplied. I hold that, rightly understood, they embody the whole philosophy of naval warfare. I have therefore lost no opportunity of insisting on them, knowing full well that it is only by frequent iteration that sound ideas can be implanted in minds not attuned to their reception.



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